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Georgetown, South Carolina Air Quality Maintenance Planning and Analysis

U.S. Environmental Protection Agency
Region IV
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16. ABSTRACT

An area source emission inventory was developed for Georgetown County, South Carolina. Baseline year emissions estimates were allocated to grids. The Air Quality Display Model (AQDM) was used to determine the source-receptor relationship for the baseline year. Using this baseline relationship and a projected emission inventory, the AQDM was used to analyze air quality attainment and maintenance in 1980 and 1985. Although all criteria pollutants were inventoried, only particulate emissions were modeled.

Primary National Ambient Air Quality Standards for particulate were violated during the baseline year. The analysis indicated that the standards will continue to be violated unless more stringent controls are adopted. Further study of weather conditions and fugitive emissions from industrial point sources was recommended. Additional modeling was attempted to incorporate industrial process fugitive particulate emissions in the analysis.

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GEORGETOWN, SOUTH CAROLINA
AIR QUALITY MAINTENANCE
PLANNING AND ANALYSIS

Submitted to

South Carolina Department of Health
and Environmental Control Bureau
of Air Quality

United States Environmental Protection Agency
Region IV

Submitted by

ENGINEERING-SCIENCE
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McLean, Virginia 22101

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CHAPTER I

INTRODUCTION

Engineering-Science is under a continuing contract to the Environmental Protection Agency, Region IV, to assist the South Carolina Department of Health and Environmental Control (DHEC) in the analysis phase of the air quality maintenance program. Earlier reports under this contract contained the results of the analyses for the Greenville Air Quality Maintenance Area (AQMA) and the Charleston AQMA consisting of parts of Charleston and Berkeley Counties. This report documents the analysis for Georgetown County.

The analysis phase of the air quality maintenance program determines whether or not national ambient air quality standards will be attained and maintained during the decade 1975 to 1985. The analysis consists of several component parts:

- A baseline year county-wide comprehensive inventory of all point and area sources.
- Allocation or assignment of county-wide sources to appropriate sub-county areas or discrete locations.
- Dispersion modeling of the baseline year to determine the source-receptor relationship.
- Projection of the baseline year county-wide area source emissions and point source emissions to the planning years.
- Allocation or assignment of the projected emissions to sub-county areas and locations.
- Exercise of the dispersion model to determine projected air quality.

The baseline year is 1975 and the planning years are 1980 and 1985. All the criteria pollutants are considered: total suspendable particulate matter (TSP), sulfur dioxide (SO_2), carbon monoxide (CO), non-methane hydrocarbons (HC), and oxides of nitrogen (NO_x). Only TSP and SO_2 concentrations are amenable to dispersion modeling. Furthermore, very low levels of SO_2 have been observed in Georgetown County, and it is not considered necessary to conduct the complete analysis for this pollutant. Therefore, the allocation and modeling components of the analysis apply only to TSP.

In general, Engineering-Science was responsible for the area source emissions inventory, allocation, and projections, and the DHEC for point sources. Engineering-Science maintained the Emission Inventory System master file and performed the modeling work.

Throughout the project, wherever possible and to the degree possible, the instructions contained in EPA documents and publications were followed. In particular, reference is made to the following:

- Compilation of Air Pollution Emission Factors, AP-42 (Supplement No. 6).
- Guide for Compiling a Comprehensive Emission Inventory, APTD-1135.
- Guidelines for Air Quality Maintenance Planning and Analysis, Volume 7: Projecting County Emissions.
- Guidelines for Air Quality Maintenance Planning and Analysis, Volume 13: Allocating Projected Emissions to Sub-county Areas.
- 40 CFR 51. Maintenance of National Ambient Air Quality Standards.

In addition to this introduction this report contains a chapter which summarizes the demographic and economic data upon which the inventory, allocation and projections were based, and a chapter which describes the sub-county grid system used for the dispersion model. The remaining six chapters discuss the component parts of the analysis.

CHAPTER II

POPULATION, EMPLOYMENT, AND LANDUSE

The general county demographic, economic and growth characteristics are discussed separately in this chapter since population and employment projections and the location of the industry, housing, and commercial and institutional establishments and transportation facilities required to support the growth will in large measure determine the projection and location of pollutant emissions. In Chapters VII and VIII of this report emissions for each area source category will be projected to the 1980 and 1985 planning years and the projected emissions allocated to the appropriate subcounty areas. For each source category the projections can be done in one of three ways:

- A two-step approach in which county-wide emissions are projected in accordance with some appropriate surrogate projection parameter and then distributed to sub-county areas in accordance with independently determined allocation factor.
- Since baseline year emissions have been allocated to sub-county areas, projection of the disaggregated totals directly may be made for those source categories for which the required information is available.
- A combination of the first two methods in which disaggregated baseline year emissions are projected and then normalized to an independently determined projected county-wide total. This approach is the one most commonly used.

1. POPULATION

Baseline year and projected population estimates were available from the Waccamaw Regional Planning and Development Council. These data are given in Table II-1. Figure II-1 shows the county census divisions for which population estimates were made.

TABLE II-1

POPULATION PROJECTIONS

	1970	1975	1980	1985
Plantersville	2,499	2,506	2,693	2,794
Pleasant Hill-Folly Grove	3,059	3,487	3,747	3,888
Andrews	5,174	5,066	5,329	5,550
Georgetown	10,449	11,208	11,350	11,950
Georgetown Rural	5,189	6,499	6,914	7,477
Sampit-Santee	3,977	4,174	4,802	5,527
Waccamaw	3,153	3,129	4,313	5,182
Georgetown County	33,500	36,069	39,148	42,998
Seasonal(1)		16,675	24,638	32,852

(1) Seasonal population includes occupants at seasonal or secondary homes and occupants of transient lodging facilities. The figures given are estimated average occupancy during the summer season; June, July, and August.

Figure II-1.

GEORGETOWN COUNTY CENSUS DIVISIONS

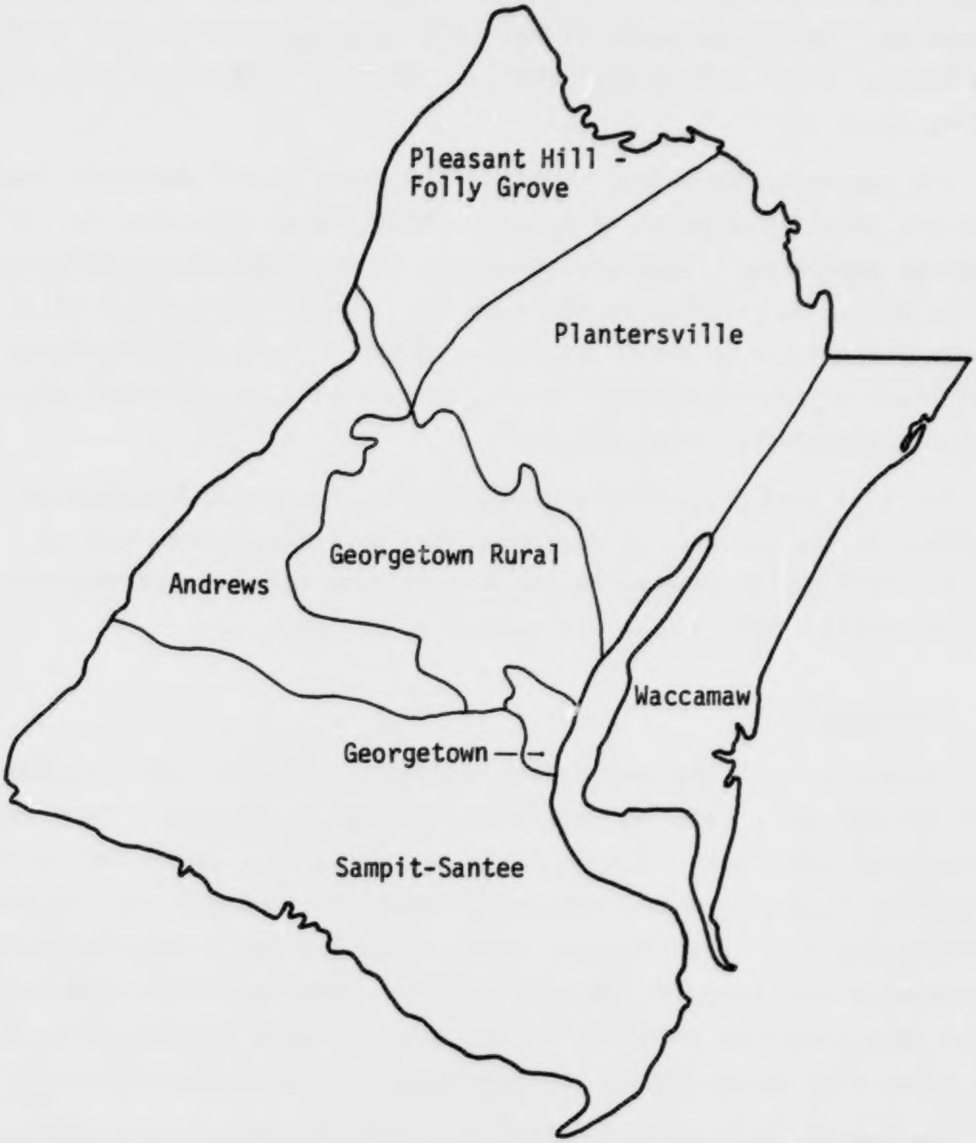


Table II-2 shows the population growth factors for the county census divisions from 1970 to 1985 normalized to the baseline year 1975. In addition, for those divisions near the cities of Georgetown and Andrews, growth factors for the city, the city fringe, and rural areas are shown separately. The fringe areas extend a few miles outside the city limits (see Chapter III). Beyond that distance, within the district, the rural factors apply.

The seasonal population, affecting the Grand Strand (Waccamaw Census Division) only, is expected to grow at a much faster rate than the permanent population. However, the effect of the seasonal population and its growth on particulate emissions is limited. Such effect will be seen only in the road vehicle source category, reflecting increased traffic and in the categories relating to construction: off-road vehicle emissions and construction activity.

The 1970 population counts were available for the 29 enumeration districts in the County. By combining this information with that in Tables II-1 and II-2 population projections were made for the enumeration districts. The results are summarized in Table II-3.

2. EMPLOYMENT

Nonagricultural wage and salary employment data for 1974 were available from the South Carolina Employment Security Commission. These data are shown in Table II-4. Manufacturing employment was listed for three categories: food and kindred products, lumber and wood products and other manufacturing products. The last category was further broken down from employment totals given in the 1975 South Carolina Industrial Directory. "Other Manufacturing" in Table II-4 includes not only SCC categories not listed but also manufacturing employment not listed in the Directory.

Employment projections for 1990 were available from the Georgetown County Development Plan. These projections showed an increase in employment of 22% from 1970 to 1990 based on a population increase of 15%. Later

TABLE II-2

POPULATION GROWTH FACTORS

	1970	1975	1980	1985
Plantersville	0.997	1.00	1.075	1.115
Pleasant Hill-Folly Grove	0.877	1.00	1.075	1.115
Andrews	1.021	1.00	1.052	1.096
City		1.00	1.012	1.024
Fringe Area		1.00	1.134	1.268
Rural		1.00	1.075	1.114
Georgetown	0.932	1.00	1.013	1.066
Georgetown Rural	0.798	1.00	1.064	1.150
Fringe Area		1.00	1.061	1.162
Rural		1.00	1.074	1.115
Sampit-Santee	0.953	1.00	1.150	1.324
Fringe Area		1.00	1.364	1.909
Rural		1.00	1.074	1.115
Waccamaw	1.008	1.00	1.378	1.857
Georgetown County	0.929	1.00	1.085	1.192
Seasonal		1.00	1.478	1.970

TABLE II-3

POPULATION PROJECTIONS BY ENUMERATION DISTRICT

Enumeration Districts		1970	1975	1980	1985
Plantersville	1	1,508	1,512	1,625	1,686
	2	991	994	1,068	1,108
	Total	2,499	2,506	2,693	2,794
Pleasant Hill-Folly Grove	3	458	522	561	582
	4	1,285	1,465	1,574	1,633
	5	1,316	1,500	1,612	1,673
	Total	3,059	3,487	3,747	3,888
Andrews	6	1,172	1,170	1,184	1,198
	7	1,659	1,656	1,676	1,697
	8	1,161			
	Fringe		512	581	649
	Rural		598	643	667
	9	1,182			
	Fringe		522	592	662
	Rural		608	653	677
	Total	5,174	5,066	5,329	5,550
Georgetown	13	1,480	1,588	1,608	1,693
	14	766	822	832	876
	15	1,329	1,426	1,444	1,520
	16	1,053	1,129	1,143	1,204
	17	1,342	1,439	1,457	1,534
	18	917	984	997	1,050
	19	956	1,025	1,038	1,093
	20	0	0	0	0
	21	789	846	857	902
	22	1,817	1,949	1,974	2,078
	Total	10,449	11,208	11,350	11,950

TABLE II-3 (Cont'd.)

Enumeration Districts		1970	1975	1980	1985
Georgetown Rural	10	1,797			
	Fringe		1,635	1,734	1,899
	Rural		758	814	845
	11	1,874			
	Fringe		1,705	1,808	1,980
	Rural		791	850	882
	12	1,518	1,610	1,708	1,871
	Total	5,189	6,499	6,914	7,477
Sampit-Santee	27	1,565			
	Fringe		542	739	1,035
	Rural		1,090	1,171	1,215
	28	803	863	927	962
	29	1,609			
	Fringe		558	761	1,065
	Rural		1,121	1,204	1,250
	Total	3,977	4,174	4,802	5,527
Waccamaw	23	548	544	750	1,011
	24	1,200	1,191	1,642	2,213
	25	958	951	1,311	1,766
	26	447	443	610	822
	Total	3,153	3,129	4,313	5,812
County Total		33,500	36,069	39,148	42,998

TABLE II-4

NONAGRICULTURAL WAGE AND SALARY EMPLOYMENT PROJECTIONS

	1974	1975	1980	1985
Manufacturing	4,960	5,041	5,545	6,095
Food and Kindred Products	100	102	102	102
Lumber and Wood Products	360	366	369	371
Paper and Allied Products	355	361	385	410
Textiles and Apparel	1,145	1,164	1,248	1,335
Primary and Fabricated Metals	1,277	1,247	1,375	1,512
Stone, Glass, and Clay Products	25	25	29	33
Printing and Publishing	28	28	31	35
Chemicals and Allied Products	18	18	21	24
Other Manufacturing	1,702	1,730	1,985	2,273
Contract Construction	460	467	501	552
Transportation, Communication, Utilities	310	315	313	344
Wholesale and Retail Trade	1,750	1,778	1,809	1,957
Finance, Insurance, Real Estate	380	386	461	535
Services	1,370	1,392	1,690	1,967
Government	1,560	1,585	1,740	2,009
TOTAL	10,790	10,964	12,059	13,459

population projections, those upon which the data in Table II-1 are based, show an increase of 42% over the same period. The Development Plan projections were adjusted upward to reflect this increased population growth. This was done by using the Plan's employment to population ratios for each of the planning years. The results are summarized in Table II-4.

Projections for each employment class were made from the 1972 OBERS projections for the Florence, South Carolina Economic Area. The OBERS projections are based on earnings in 1967 dollars. Employment projections were made on this basis and then adjusted to the county total.

3. LANDUSE PLANNING

Four sources of information were available concerning projected land use:

- The Georgetown County Development Plan published in 1972. This comprehensive plan provides sufficient data on future land use to permit adequate allocation of those emissions which depend upon land use and transportation planning. However, the plan was based on very conservative growth parameters which must be updated.
- Georgetown Land Use Plan Update published in 1975. This 201 planning document is limited to considerations of the Georgetown City urban area.
- Regional Development Impact Matrix published in 1976. This document provides a comprehensive overview of baseline year data but does not provide future landuse information.
- Official Georgetown County Zoning Maps.

CHAPTER III

GRID SYSTEM

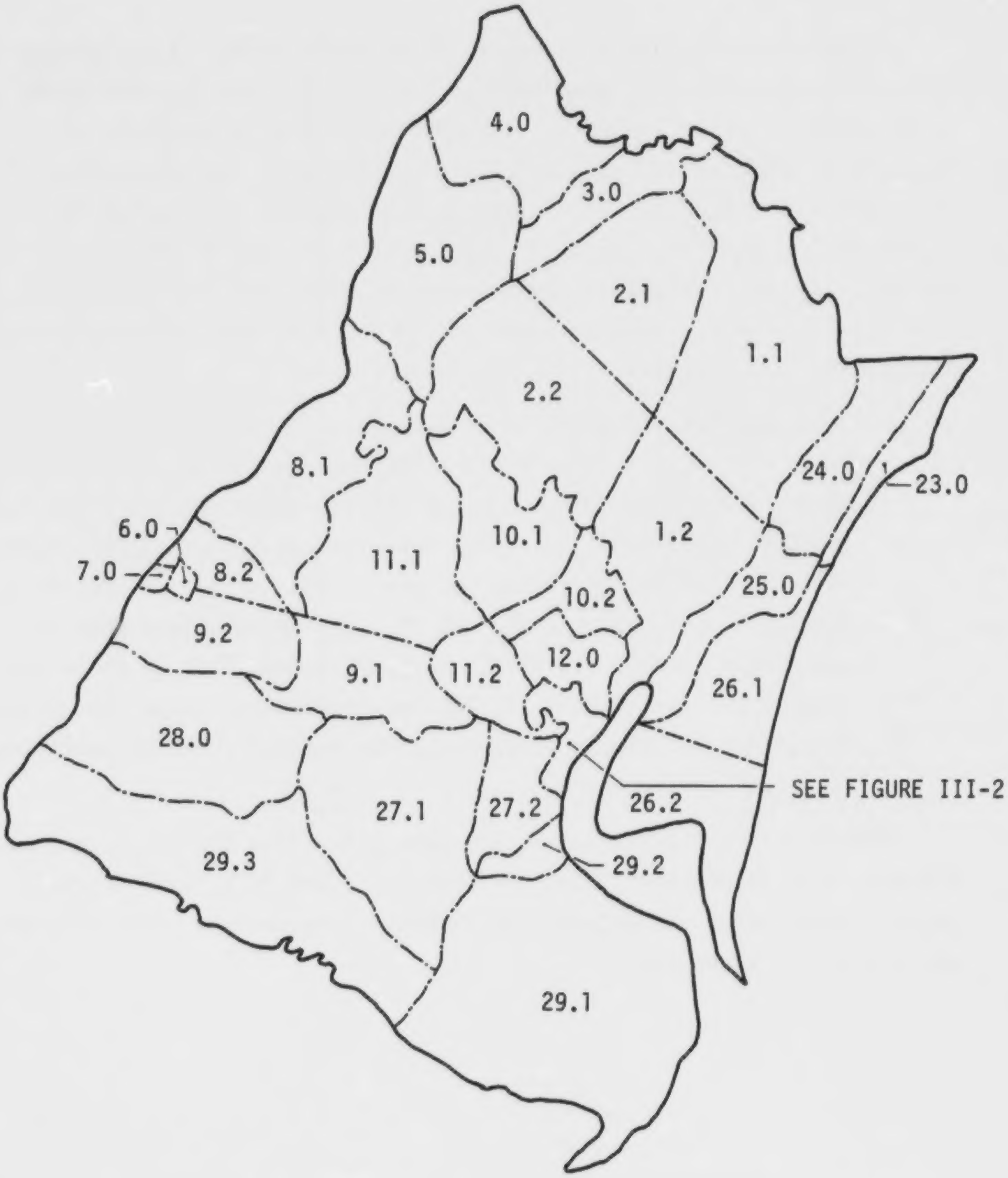
Dispersion model inputs include, among other things, area source grid system locations and dimensions. There is no need for the system to be symetric and orthogonal. Rather the grid system should be designed to best exploit the resolution of the basic data from which emissions are calculated. This is the case for the grid system designed for this project and shown in Figures III-1 and III-2. The system is designed around census enumeration districts, and, in fact, with two exceptions, the grid subdivisions are congruent with enumeration districts. These two exceptions are listed below:

- o In those cases in which an enumeration district included both rural and urban fringe areas, as defined by the Waccamaw Regional Planning and Development Council and for which different population projections are available, the district was subdivided in accordance with the rural-urban fringe boundary. This exception applied to districts 8, 9, 10, 11, 27, and 29. The urban fringe area is designated as 8.2, 9.2, 10.2, 11.2, 27.2, and 29.2 in these districts.
- o Enumeration districts 1, 2, 26, and 29 were too large for optimum dispersion modeling. These districts were arbitrarily subdivided into near equal parts.

Table III-1 lists the sub-county area grids with the required location and dimension information. In grid areas 1.1 and 29.1, both of which contain large areas of wetland, the centroid location was adjusted toward the centers of human activity.

Figure III-1.

GEORGETOWN COUNTY GRID SYSTEM⁽¹⁾



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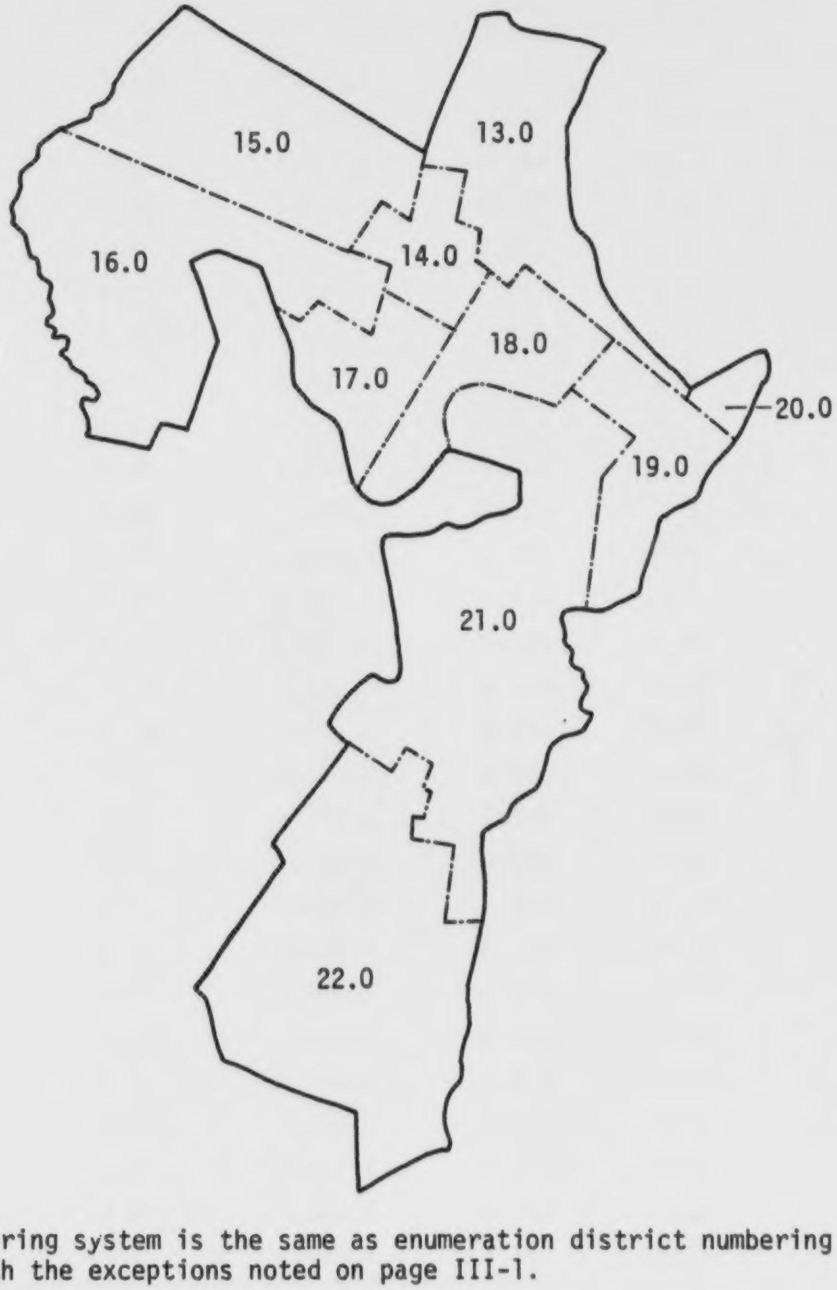
(1) Grid numbering system is the same as enumeration district numbering system with the exceptions noted on page III-1.

Figure III-2.

GEORGETOWN CITY GRID SYSTEM (1)



(1) Grid numbering system is the same as enumeration district numbering system with the exceptions noted on page III-1.

TABLE III-1

GRID SYSTEM

GRID NO.	CENTROID EAST	LOCATION (UTM) NORTH	AREA (Km^2)
1.1	667.3	3,713.4	166.3
1.2	665.8	3,703.9	91.9
2.1	663.8	3,720.1	102.4
2.2	656.0	3,713.5	118.5
3.0	659.7	3,727.4	39.1
4.0	655.2	3,733.1	85.9
5.0	650.4	3,722.5	107.3
6.0	634.1	3,701.5	2.5
7.0	632.7	3,702.0	2.6
8.1	642.1	3,708.4	89.1
8.2	636.6	3,703.0	24.5
9.1	644.3	3,696.5	57.2
9.2	635.6	3,698.5	46.6
10.1	655.1	3,705.2	65.3
10.2	660.3	3,701.5	27.4
11.1	647.8	3,704.0	106.5
11.2	653.6	3,695.9	27.6
12.0	660.2	3,696.8	28.1
13.0	659.4	3,694.7	1.5
14.0	658.9	3,694.0	0.5
15.0	657.6	3,695.0	1.9
16.0	656.9	3,693.9	2.5
17.0	658.4	3,693.3	0.8
18.0	659.3	3,693.3	0.9
19.0	660.3	3,692.7	0.8
20.0	660.9	3,693.2	0.2
21.0	659.3	3,691.5	3.1
22.0	658.1	3,689.2	3.6

TABLE III-1 (Cont'd)

GRID SYSTEM

23.0	680.2	3,710.4	23.5
24.0	677.0	3,710.4	52.3
25.0	669.1	3,699.7	32.9
26.1	670.2	3,695.5	51.4
26.2	665.2	3,688.1	68.1
27.1	648.8	3,687.2	118.2
27.2	655.3	3,689.2	34.3
28.0	635.2	3,692.0	113.9
29.1	655.6	3,680.0	224.1
29.2	657.3	3,684.4	11.2
29.3	638.3	3,683.0	168.6

CHAPTER IV

BASELINE YEAR EMISSIONS INVENTORY

The 1975 area source emissions inventory includes 20 source categories which emit particulates and, in some cases, one or more of the other criteria pollutants.

There are eight other particulate categories for which emissions are negligible or have been included in the point source inventory. These source categories, listed below, are not considered further.

- Industrial fuel usage, area sources
- Internal fuel usage, area sources
- Slash burning
- Frost control
- Unpaved airstrips
- Mineral processing
- Windblown dirt
- Coal refuse burning

In addition, there are three source categories which emit only hydrocarbons:

- Solvent evaporation
- Petroleum marketing
- Surface coating

The emission inventory for these three sources are not included in this report.

For the 20 particulate source categories the following paragraphs discuss the data requirements, data sources and availability, emission factors, and the methodology for determining the county-wide emissions.

1. RESIDENTIAL FUEL USAGE

This source category includes emissions from the burning of residential heating fuel. Emission factors based on quantity and type of fuel consumed are found in AP-42.

Volume 7 of the Guidelines provides a method for determining the quantities of fuel consumed. Based on dwelling size distribution and fuel type distribution, both available from census information, and the number of heating degree days, available from the National Climatic Center, the method has been programmed for computational assistance. Table IV-1 summarizes the two independent distributions taken from the census data. The resulting emissions are shown in Table IV-2.

2. COMMERCIAL/INSTITUTIONAL FUEL USAGE

This source category includes emissions from the burning of fuel for commercial and institutional space heating. Emission factors, found in AP-42, are based on quantity and type of fuel consumed.

In the planning stage of the Georgetown County analysis it was decided that a fuel survey was unnecessary. It was suggested that the fuel survey information gathered for the Charleston analyses might be extrapolated for Georgetown County. Consequently, Berkeley County fuel use, on a Btu basis, has been factored by the ratio of commercial/institutional employees for the two counties, found in County Business Patterns.

$$\frac{2{,}822}{1{,}695} \times 7.82 \times 10^{10} = 13.02 \times 10^{10} \text{ Btu/yr}$$

Total Btu were distributed among fuel type in accordance with the distribution of LPG, gas, and oil among residential units. The results are shown in Table IV-3 and IV-4.

3. AGRICULTURAL EQUIPMENT

This source category includes exhaust and evaporative emissions from tractors and other self-propelled agricultural equipment. Emission factors, from AP-42, are based on the number of equipment operating hours.

Information concerning agricultural equipment was obtained from the U. S. Department of Agriculture County Extension Agent for Georgetown County. According to his estimates there were 325 tractors operating

TABLE IV-1

1970 CENSUS DATA

DWELLING SIZE DISTRIBUTION SIZE	NO.	FUEL TYPE DISTRIBUTION TYPE	%
1	7,850	Natural Gas	3.5
2	176	LPG	13.0
3-4	109	Electricity	4.7
5-49	42	Oil	64.6
50+	15	Coal	0.4
Mobile	570	Wood	13.6
		None	0.2
Total	8,762		100.0

TABLE IV-2

BASELINE YEAR EMISSIONS FROM RESIDENTIAL FUEL USAGE

(TONS/YR)

FUEL TYPE	AMOUNT	TSP	SO_2	CO	HC	NO_x
Natural Gas	16×10^6 ft^3	0.1	Neg.	0.2	0.1	0.8
LPG	686×10^3 gal	0.6	Neg.	0.7	0.3	3.3
Distillate Oil(1)	$1,788 \times 10^3$ gal	2.2	25.4	4.5	0.9	16.1
Bituminous Coal(2)	79 tons	0.8	1.9	3.6	0.8	0.1
Wood	429 tons	3.6	Neg.	10.7	0.9	0.4
Total		7.3	27.3	19.7	3.0	20.7

(1) 0.2% S. Source: DHEC

(2) 1.25% S. Source: DHEC

TABLE IV-3

BASELINE YEAR COMMERCIAL/INSTITUTIONAL FUEL USAGE

FUEL TYPE	DWELLING UNITS	10^{10} Btu	FUEL USED
LPG (10^3 gal)	1,141	2.09	222
Natural Gas (10^6 ft^3)	308	0.56	5
Distillate Oil (10^3 gal)	5,658	10.37	741
Total	7,107	13.02	968

TABLE IV-4

BASELINE YEAR EMISSIONS FROM COMMERCIAL/INSTITUTIONAL FUEL USAGE

(TONS/YR)

FUEL TYPE	TSP	SO_2	CO	HC	NO_x
LPG	0.2	Neg.	0.2	0.1	1.1
Natural Gas	Neg.	Neg.	0.1	Neg.	0.3
Distillate Oil(1)	0.7	10.5	1.9	0.4	8.2
Total	0.9	10.5	2.2	0.5	9.6

---

(1) 0.2% S. Source: DHEC

in the county in 1975, 50% diesel and 50% gasoline, each operating 500 hours/year. The numbers of other self-propelled agricultural equipment and LPG-fueled tractors were negligible.

AP-42 suggests that farm tractors are 30% diesel and 70% gasoline, each operated 550 hours/year with fuel consumption of 1,641 gallons/year for diesel and 1,258 gallons/year for gasoline tractors. On the other hand, Volume 7 of the Guidelines suggests that farm tractors, nationwide are 35% diesel, 60% gasoline, and 5% LPG-fueled, all with a fuel consumption of 1,000 gallons/year. The 1974 Census of Agriculture reports 455 tractors in Georgetown County. It is the opinion of the County Agent that many of the tractors reported in the Census are not used to any significant degree.

In calculating the emissions below, the data provided by the County Agent have been used.

TSP emissions:

$$325 \times 0.5 \times 500 \times (0.136 + 0.018) \times \frac{1}{2000} = 6.3 \text{ tons/yr.}$$

SO_2 emissions:

$$325 \times 0.5 \times 500 \times (0.093 + 0.012) \times \frac{1}{2000} = 4.3 \text{ tons/yr.}$$

CO emissions:

$$325 \times 0.5 \times 500 \times (0.355 + 7.46) \times \frac{1}{2000} = 317.5 \text{ tons/yr.}$$

HC emissions:

$$\left[325 \times 0.5 \times 500 \times (0.282 + 0.057) \times \frac{1}{2000}\right]$$
$$+ \left[325 \times 0.5 \times 34.4 \times \frac{1}{2000}\right] = 16.6 \text{ tons/yr.}$$

NO_x emissions:

$$325 \times 0.5 \times 500 \times (0.996 + 0.346) \times \frac{1}{2000} = 54.5 \text{ tons/yr.}$$

4. SMALL GASOLINE ENGINES

This source category includes exhaust emissions from small gasoline engines of the types which would typically have a residential application, e.g., lawn mowers, air compressors, generators, garden tractors, etc. It does not include certain other classes of small engines which are included under other source categories (outboard motors) or for which there are no emission factors (chain saws). Emission factors, from AP-42, are based on quantity of fuel consumed.

Volume 7 of the Guidelines suggests a consumption rate of 13 gallons/ person-year. Population estimates from Table II-1 result in the following county-wide fuel consumption and emissions:

Fuel consumption:

$36{,}069 \times 13 = 469 \times 10^3$ gal/yr.

TSP emissions:

$469 \times 10.7 \times \frac{1}{2000} = 2.5$ tons/yr.

SO_2 emissions:

$469 \times 5.17 \times \frac{1}{2000} = 1.2$ tons/yr.

CO emissions:

$469 \times 3{,}688 \times \frac{1}{2000} = 864.8$ tons/yr.

HC emissions:

$469 \times 399 \times \frac{1}{2000} = 93.6$ tons/yr.

NO_x emissions:

$469 \times 52.2 \times \frac{1}{2000} = 12.2$ tons/yr.

Emission factors were calculated assuming 10% two-stroke lawn and garden engines, 45% four-stroke lawn and garden engines, and 45% four-stroke miscellaneous engines.

5. CONSTRUCTION EQUIPMENT

This source category includes exhaust emissions from off-highway construction equipment and other miscellaneous diesel engines not included elsewhere. Emission factors from AP-42 are based on quantity of fuel consumed.

APTD-1135 and Volume 7 suggest a factor of 5,000 gallons of diesel construction equipment fuel usage per non-building construction employee. In addition, 7.4 gallons/person-year is suggested as a factor for miscellaneous diesel fuel consumption. With these factors a state-wide fuel consumption can be calculated using the population estimates from the 1975 South Carolina Statistical Abstracts and the 1973 U. S. Department of Commerce County Business Patterns:

$$(5{,}000 \times 38{,}496) + (7.4 \times 2{,}784{,}000) = 2.13 \times 10^8 \text{ gal.}$$

When compared to the total South Carolina off-highway and miscellaneous diesel fuel consumption given in the 1974 Mineral Industry Survey (MIS) (2.06×10^7 gallon), it is apparent that the fuel consumption factors are too large.

In the AQMA analysis for Charleston it was found that construction equipment and miscellaneous fuel usage for Berkeley County totaled 228,443 gallons. Fuel consumption for Georgetown County can be estimated from the ratio of non-building construction employees between the two counties:

$$\frac{178}{583} \times 228{,}443 = 70 \times 10^3 \text{ gal/yr.}$$

County-wise emissions are calculated below:

TSP emissions:

$$70 \times 26.1 \times \frac{1}{2000} = 0.9 \text{ tons/yr.}$$

SO_2 emissions:

$$70 \times 31.2 \times \frac{1}{2000} = 1.1 \text{ tons/yr.}$$

CO emissions:

$$70 \times 95.2 \times \frac{1}{2000} = 3.3 \text{ tons/yr.}$$

HC emissions:

$$70 \times 29.1 \times \frac{1}{2000} = 1.0 \text{ tons/yr.}$$

NO_x emissions:

$$70 \times 407 \times \frac{1}{2000} = 14.2 \text{ tons/yr.}$$

Emission factors were calculated as the average of all equipment types.

6. RAILROAD LOCOMOTIVES

This source category includes exhaust emissions from diesel locomotives, both line-haul and switch engines, as well as emissions from auxiliary equipment and probably some space heating. Emission factors, from AP-42, are based on quantity of fuel consumed.

The Savannah Division of the Seaboard Coast Line Railroad operates one train per day, both ways, through Andrews; an additional six trains per week, both ways from Andrews north; and provides unscheduled freight service between Andrews and Georgetown. There are 2.5 miles of mainline track in Georgetown County north of Andrews and 12.0 miles south of Andrews. The railway distance from Andrews to Georgetown is 15.0 miles.

The AQMA analysis for Charleston showed that nationwide line-haul and switch engine fuel use may be estimated at 9.0 gallons/train-mile. In Berkeley County, served by the Savannah Division, actual fuel consumption provided by Seaboard Coast Line indicated a value of 4.7 gallons/train-mile to be more accurate. Since the 4.7 gallons/train-mile specifically applies to the division serving Georgetown County, this factor is more appropriate than the nationwide factor.

Assuming that there are three trains per week, both ways, from Andrews to Georgetown, county-wide train miles can be calculated by:

$$[(14 \times 14.5) + (12 \times 2.5) + (6 \times 15)] \times 52 = 16{,}796 \text{ train-miles/yr.}$$

and total fuel consumption is 78,941 gallons/year.

County-wide emissions are calculated below.

TSP emissions:

$$79 \times 25 \times \frac{1}{2000} = 1.0 \text{ tons/yr.}$$

SO_2 emissions, at 0.5% sulfur reported by the railroad:

$$79 \times 57 \times \frac{0.5}{0.4} \times \frac{1}{2000} = 2.8 \text{ tons/yr.}$$

CO emissions:

$$79 \times 130 \times \frac{1}{2000} = 5.1 \text{ tons/yr.}$$

HC emissions:

$$79 \times 94 \times \frac{1}{2000} = 3.7 \text{ tons/yr.}$$

NO_x emissions:

$$79 \times 370 \times \frac{1}{2000} = 14.6 \text{ tons/yr.}$$

7. VESSELS

This source category includes exhaust emissions from main propulsion engines and auxiliary equipment from vessels and associated terminal equipment. Emission factors, from AP-42, are based on quantity and type of fuel burned. Three types of vessels are considered:

- o Commercial vessels (dry cargo, tankers, ore barges,etc.)
- o Recreational boats
- o Miscellaneous vessels (tugs, dredges, etc.)

Commercial shipping statistics for 1974 for Georgetown Harbor and the Intracoastal Waterway were obtained from Waterborne Commerce of the United States, Part I. There were 2,108,756 tons of traffic handled at the port including through traffic on the Waterway as follows:

- o Oceangoing Traffic - 771,376 tons
- o Waterway Traffic Southbound - 579,851 tons

- Waterway Traffic Northbound - 268,759 tons
- Through Waterway Traffic - 488,770 tons

Emissions from this traffic can be estimated with certain reasonable assumptions and estimates discussed below.

- Ocean-going vessels are fueled 89% residual and 11% distillate. These values are based on information found in the MIS for bunkering fuel sold in 1973 in South Carolina. The 1973 values for the residual/distillate split are believed to be more representative than 1974 because of the effect of the precipitous rise in fuel costs in 1974. In this respect it is noted that while total freight traffic at South Carolina ports showed little change between the years, residual oil sales decreased nearly 50% and distillate oil sales decreased 1%. It can be concluded that ocean-going vessels purchased greater quantities of fuel outside the United States in 1974 and that the 1974 data are non-representative of the split between residual and distillate fueled ships calling at Georgetown Port.
- All Intracoastal Waterway vessels are fueled with distillate oil.
- The 1974 values should be increased by 4.9% to account for growth between 1974 and 1975. This factor is based on linear regression analysis of the 1965 to 1974 data.
- Ocean-going vessels have a transit of 17 miles between the Georgetown turning basin and the entrance to Winyah Bay.
- Waterway Traffic Southbound has a transit of 18 miles within Georgetown County.
- Waterway Traffic Northbound has a transit of 19 miles within Georgetown County.
- Through waterway traffic has a transit 36 miles within Georgetown County.

- All vessels receive power and/or steam from the dock and engines are shut down. Emissions from hoteling are negligible. This operating practice was confirmed by Port Authority representatives.
- Energy requirements for water-borne freight movement are 590 BTU/ton-miles based on values of 500 and 680 Btu/ton-mile reported in The Effect of Fuel Price Increases on Energy Intensiveness on Freight Transport, RAND Corporation, 1971; and Energy Intensiveness of Passenger and Freight Transport Modes, Oak Ridge National Laboratory, 1973, respectively.

Fuel consumed by and emissions from commercial vessels are summarized in Table IV-5.

In the Charleston AQMA analysis it was found that there were 0.086 recreational boats per capita in Berkeley County of which 90% regularly used local waters. This factor included boats owned by local residents as well as those brought in from other regions. All used gasoline-powered, outboard motors. Because of the similarity of the two counties and the relative insignificance of this source category, these factors may be used for Georgetown County. Furthermore, Volume 7 of the Guidelines suggests that 160 gallons/year is the average fuel consumption for recreational boats. Because the recreational waters in Georgetown County are more extensive than the national average and consequently accommodate larger boats, it is suggested that a larger fuel consumption per boat would be appropriate. Fuel usage/boat was assumed to be 240 gallons. No account was taken of boats brought in during the seasonal influx of population on the Grand Strand. These boats would operate off-shore and not affect Georgetown air quality. Fuel usage and emissions are summarized in Table IV-5.

Fuel usage for miscellaneous vessels and terminal equipment was factored from the Charleston AQMA analysis data in accordance with the ratio of waterborne freight traffic handled by the two ports. Usage and emissions are summarized in Table IV-5.

TABLE IV-5

FUEL CONSUMED AND EMISSIONS FROM VESSELS

	FUEL CONSUMED (10^3 GAL)		EMISSIONS (TONS/YR)				
			TSP	SO_2	CO	HC	NO_x
Commercial Vessels	Residual	Distillate					
Ocean-Going(1)	48	6	0.5	13.5	0.1	Neg.	1.4
Waterway Southbound(2)	--	46	2.4	0.6	2.5	1.2	6.2
Waterway Northbound(2)	--	23	1.2	0.3	1.3	0.6	3.1
Through Waterway(2)	--	78	4.1	1.1	4.3	2.0	10.5
Recreational Vessels	Gasoline						
County Total(3)	744		Neg.	2.4	1,116.0	409.2	2.5
Miscellaneous Vessels	Distillate						
County Total(2)	6		0.3	0.1	0.3	0.2	0.8
Terminal Equipment	Gasoline	Diesel					
Georgetown Harbor(4)	25	28	0.5	0.5	50.7	2.2	7.8
Total			9.0	18.5	1,175.2	415.4	32.3

(1) AP-42, Table 3.2.3-2, cruise mode, residual oil 3.5% S, distillate 0.4% S.

(2) AP-42, Table 3.2.3-1, coastal waters; in the case of STP, AP-42, Section 3.2.3 dated 2/72.

(3) AP-42, Table 3.2.4-1.

(4) AP-42, Table 3.3.3-1, exhaust HC only.

8. ROAD VEHICLES

This source category includes exhaust emissions from road vehicles and, for particulate matter, tire and brake wear, and for hydrocarbons, evaporative losses. Emission factors are found in AP-42. Emissions depend upon the number of vehicle miles travelled (VMT) for light and heavy duty vehicles both gasoline and diesel. In the case of CO, HC, and NO_x, emissions vary with vehicle speed and age. However, AP-42 provides average emission factors based on national average speeds and vehicle age mix. Average factors are used here to calculate emissions for CO, HC, and NO_x.

A complete set of average daily traffic (ADT) volumes for 1975 for all primary and secondary roads and some unimproved roads in the County was available from the South Carolina State Highway Department. In addition, from the same source, 1973 and 1974 ADT for city streets in Andrews and Georgetown were available. Combined with road miles these data permitted a very complete and accurate estimate of VMT for all paved roads and streets in each of the sub-county grid areas. The results are summarized in Table IV-6.

There were insufficient ADT counts to determine VMT for unpaved roads, most of which are primitive roads or non-connecting roads which would have insignificant traffic when compared to the major highways in the County. However, unpaved road miles were available. By assuming a nominal average ADT for unpaved roads of 25 an adjustment to total VMT can be made to include these emissions. Table IV-6 shows the results.

It was determined in the AQMA analysis for Charleston that the proportion of heavy duty vehicle miles travelled varied from 2 to 9% of total traffic depending upon the classification of the road. For circumferential arterial and collector roads, the classification for most roads in Georgetown County, the heavy duty vehicle traffic averaged 3% of the total. Further, in the Charleston analysis, it was shown that 35.9 of heavy duty vehicle miles were in diesel vehicles. From the Charleston data, total Georgetown County, VMT are estimated as follows:

TABLE IV-6

COUNTY TRAFFIC AND ROAD DATA

GRID NO.	PRIMITIVE (miles)	UNIMPROVED (miles)	PAVED (VMT)
1.1	5.8	6.0	13,851
1.2	3.2	17.7	5,203
2.1	1.6	3.5	8,398
2.2	10.5	19.9	19,594
3.0	--	2.6	4,711
4.0	--	13.4	13,810
5.0	--	24.1	14,809
6.0	--	--	12,782
7.0	--	--	7,218
8.1	--	18.6	25,538
8.2	--	4.2	13,670
9.1	--	10.7	32,668
9.2	--	9.2	27,878
10.1	1.1	8.6	15,935
10.2	--	7.0	22,310
11.1	--	36.1	5,902
11.2	--	10.7	33,963
12.0	--	4.1	20,878
13.0	--	--	17,109
14.0	--	--	7,878
15.0	--	--	13,666
16.0	--	--	1,952
17.0	--	--	7,445
18.0	--	--	17,623
19.0	--	--	3,805
20.0	--	--	1,200
21.0	--	--	9,625
22.0	--	--	19,570
23.0	--	--	35,515
24.0	1.6	6.6	58,809
25.0	3.9	3.9	46,355
26.1	3.2	6.3	44,495
26.2	4.4	--	---
27.1	12.1	16.5	17,921
27.2	0.5	8.5	26,324
28.0	7.6	15.4	25,251
29.1	14.8	4.0	13,585
29.2	1.0	0.5	3,439
29.3	2.0	19.5	22,160
Total	73.3	277.6	692,845
Total VMT	1,832	6,940	692,845
County Total			701,617

o	Light duty gasoline VMT -	680,569
o	Heavy duty gasoline VMT -	13,492
o	Heavy duty diesel VMT -	7,556
	Total	701,617

The introduction of the catalytic converter on 1974 model cars resulted in increased use of unleaded fuel and a reduction in particulate emissions from 0.54 g/mi to 0.25 g/mi. Assuming that 11% of vehicle miles travelled are in automobiles one year old (as suggested in AP-42), the 1975 particulate emission factor is:

$$\frac{(0.54 \times 89) + (0.25 \times 11)}{100} = 0.51 \text{ g/mi}$$

Particulate emission factors for heavy duty vehicles depends upon the number of tires on the vehicle. Mean number of tires and emission factors for heavy duty vehicles were determined in the Charleston AQMA analysis. The emission factors were 1.29 g/mi for heavy duty gasoline vehicles and 2.13 g/mi for heavy duty diesel vehicles.

Emission factors and emissions are summarized in Table IV-7.

TABLE IV-7

EMISSION FACTORS AND EMISSIONS FROM ROAD VEHICLES

	LDGV		HDGV		HDDV	
	FACTOR (g/mi)	EMISSIONS (tons/yr)	FACTOR (g/mi)	EMISSIONS (tons/yr)	FACTOR (g/mi)	EMISSIONS (tons/yr)
TSP	0.51	139.5	1.29	7.0	2.13	6.5
SO_2(1)	0.13	35.6	0.36	2.0	2.8	8.5
CO(2)	61.1	16,715.5	61.1	331.4	61.1	185.6
HC(2)	8.8	2,407.5	8.8	47.7	8.8	26.7
NO_x(2)	4.8	1,313.2	4.8	26.0	4.8	14.6

(1) Source: AP-42, Appendix D, Tables 1-21, 4-15, and 5-4.

(2) Source: AP-42, Appendix D, Table 7-1.

9. AIRCRAFT

This source category includes exhaust emissions from aircraft and ground handling equipment. Emission factors, found in AP-42, are based upon engine-landing takeoffs.

There are two airports in Georgetown County both operated for general aviation. Operational data for each was provided by the airport manager. These data and the resulting emissions are summarized in Table IV-8.

10. ON-SITE INCINERATION

This source category includes emissions from on-site incineration at commercial and institutional establishments.

The DHEC provided emission data for the two on-site incinerators in the county: 2.0 tons/yr. of TSP and 1.0 tons/yr. of CO.

11. OPEN BURNING

This source category includes emissions from the open burning of residential, commercial/institutional and industrial solid waste in open pits or fields and in small backyard incinerators and the disposal of agricultural, land cleaning or construction debris by burning. Agricultural burning and prescribed burning, conducted as normal agricultural or silvicultural practice are included under other source categories. Emission factors, found in AP-42, are based on quantity of waste burned.

Solid waste is collected throughout Georgetown County, twice a week in the rural area and more frequently in the urban areas and disposed of by landfill. Waste collection averages 110 tons/day. Solid waste generation is estimated, on a nation-wide basis, to average 5.5 lbs/person-day. County-wide, at this rate, approximately 99 tons of solid waste would be generated per day. It appears that waste collection is efficient and virtually no waste is burned.

TABLE IV-8

AIRCRAFT OPERATING DATA AND EMISSIONS

	LTOs/YR	EMISSIONS (LBS/YR)				
		TSP	SO_2	CO	HC	NO_x
Georgetown County Airport						
Single engine piston	5,600	112	78	68,320	2,240	263
Twin engine piston	2,750	110	77	67,100	2,200	259
Twin engine jet	300	66	222	9,480	2,160	960
Helicopter	50	12	9	285	26	29
Total		300	386	145,185	6,626	1,511
Overton Field						
Single engine piston	350	7	5	4,270	140	16
Twin engine piston	200	8	6	4,880	160	19
Total		15	11	9,150	300	35
Total Georgetown County (tons/yr)		0.2	0.2	77.2	3.5	0.8

The collection of waste, however, would not include that generated by land clearing or construction nor, in most cases, residential yard debris, principally leaves and prunings. Land clearing for agricultural purposes is negligible since total farm land is not increasing. There were no large construction projects which required land clearing in 1975. Improvement of U.S. Highway #17 south of Georgetown required little open burning in 1975, right-of-way improvement having been completed prior to this. Residential yard debris burned is estimated to be 100 lbs/dwelling unit-year, and that from construction at two tons/dwelling unit constructed. There were 11,216 dwelling units in the county in 1975, increasing at a rate of 191/year.

Emissions are calculated below:

TSP emissions:

$$[(\frac{100}{2,000} \times 11,216 \times 17) + (2 \times 191 \times 17)] \times \frac{1}{2000} = 8.0 \text{ tons/yr.}$$

SO_2 emissions:

Negligible.

CO emissions:

$$[(\frac{100}{2,000} \times 11,216 \times 60) + (2 \times 191 \times 50)] \times \frac{1}{2000} = 26.4 \text{ tons/yr.}$$

HC emissions:

$$[(\frac{100}{2,000} \times 11,216 \times 20) + (2 \times 191 \times 4)] \times \frac{1}{2000} = 6.4 \text{ tons/yr.}$$

NO_x emissions:

$$[(\frac{100}{2,000} \times 11,216 \times 2) + (2 \times 191 \times 2)] \times \frac{1}{2000} = 0.9 \text{ tons/yr.}$$

12. STRUCTURAL FIRES

This source category includes emissions from uncontrolled structural fires. Structures burned in fire training exercises are not included. No emission factors are available. Factors, from AP-42, applicable to open burning of wood refuse were used.

Because of the minor nature of the source and the uncertainty of the emission factors, total material consumed by structured fires was estimated by population ratio from the Berkeley County data from the AQMA analysis for Charleston.

Total material consumed:

$$\frac{36,069}{61,300} \times 29.1 = 17.1 \text{ tons/yr.}$$

TSP emissions:

$$17.1 \times 17 \times \frac{1}{2000} = 0.1 \text{ tons/yr.}$$

SO_2 emissions:

Negligible.

CO emissions:

$$17.1 \times 50 \times \frac{1}{2000} = 0.4 \text{ tons/yr.}$$

HC emissions:

Negligible.

NO_x emissions:

Negligible.

13. WILD FOREST FIRES

This source category includes emissions from uncontrolled fires. Not included are emissions from legal fires which are included in the prescribed burning source category. Emission factors, found in AP-42, are based on number of acres burned.

The number of fires and the acreage burned were provided by the South Carolina State Commission of Forestry. These data are shown in Table IV-9.

TABLE IV-9

WILD FOREST FIRES

	NO FIRES	ACRES BURNED	ACRES/ FIRE
FY 75	135	560.5	4.2
FY 76	373	1,951.0	5.2
Average (CY 75)	254	1,255.8	4.9

The average values from the table have been used to calculate the county-wide emissions below.

TSP emissions:

$$1{,}255.8 \times 153 \times \frac{1}{2000} = 96.1 \text{ tons/yr.}$$

SO_2 emissions:

Negligible.

CO emissions:

$$1{,}255.8 \times 1{,}256 \times \frac{1}{2000} = 788.6 \text{ tons/yr.}$$

HC emissions:

$$1{,}255.8 \times 216 \times \frac{1}{2000} = 135.6 \text{ tons/yr.}$$

NO_x emissions:

$$1{,}255.8 \times 36 \times \frac{1}{2000} = 22.6 \text{ tons/yr.}$$

14. PRESCRIBED BURNING

This source category includes the legal burning of woodland for hazard reduction, clearing of debris, improvement of hunting and grazing preserves, and control of species and disease. There are no emission factors in AP-42 for prescribed burning. The Southeastern Forest Experiment Station has suggested that the amount of fuel consumed in a prescribed burn is approximately one-third that consumed in a wild fire. Consequently, emission rates are one-third those in AP-42 for wild fires.

The number of fires and the acreage burned were provided by the South Carolina State commission of Forestry. These data are shown in Table IV-10.

TABLE IV-10

PRESCRIBED BURNS

	NO FIRES	ACRES BURNED	ACRES/ FIRES
FY 75	203	35,987	177
FY 76	275	29,339	107
Average (CY 75)	239	32,663	137

Using the average values from the table, county-wide emissions are calculated below.

TSP emissions:

$$32{,}663 \times 153 \times \frac{1}{3} \times \frac{1}{2000} = 832.9 \text{ tons/yr.}$$

SO_2 emissions:

Negligible.

CO emissions:

$$32{,}663 \times 1{,}256 \times \frac{1}{3} \times \frac{1}{2000} = 6{,}837.5 \text{ tons/yr.}$$

HC emissions:

$$32{,}663 \times 216 \times \frac{1}{3} \times \frac{1}{2000} = 1{,}175.9 \text{ tons/yr.}$$

NO_x emissions:

$$32{,}663 \times 36 \times \frac{1}{3} \times \frac{1}{2000} = 196.0 \text{ tons/yr.}$$

15. AGRICULTURAL BURNING

This source category includes emissions from the burning of stubble from harvested crops in preparation for cultivation. It does not include emissions from the burning of land clearing debris or agricultural waste material. Emission factors, found in AP-42 are based on tons of material burned.

The U. S. Department of Agriculture Extension Agent estimated that 500 acres of stubble remaining from small grain crops are burned annually at a weight of two tons/acre.

County-wide emissions are calculated below.

TSP emissions:

$$500 \times 2 \times 21 \times \frac{1}{2000} = 10.5 \text{ tons/yr.}$$

SO_2 emissions:

Negligible.

CO emissions:

$$500 \times 2 \times 117 \times \frac{1}{2000} = 58.5 \text{ tons/yr.}$$

HC emissions:

$$500 \times 2 \times 23 \times \frac{1}{2000} = 11.5 \text{ tons/yr.}$$

NO_x emissions:

$$500 \times 2 \times 4 \times \frac{1}{2000} = 2.0 \text{ tons/yr.}$$

16. PAVED ROADS

This source category includes the particulate emissions resulting from road dust reentrained by the movement of vehicular traffic over paved roads. Emission factors are not available in AP-42. However, according to information provided by EPA Region IV, current investigations indicate that emissions of from 2 to 6 g/VMT are expected. These values confirm the emission factors arrived at independently in the Charleston and Greenville AQMA analyses. For Georgetown County a value of 2.5 g/VMT has been used.

Total county-wide TSP emissions are calculated from paved road VMT values given in Table IV-6 of this chapter.

$$2.5 \times \frac{1}{454} \times 692{,}845 \times \frac{1}{2000} \times 365 = 696.3$$

17. UNPAVED ROADS

This source category includes particulate emissions resulting from vehicular traffic on unpaved roads. Emission factors, found in AP-42, are based on VMT with corrections for vehicle speed, silt content of the soil and rainy days. Emissions can be reduced by the application of surface chemicals.

The emission factors, EF, is estimated from the following equation:

$$EF = 0.49\ s\ (\frac{S}{30})\ (\frac{365-R}{365})$$

where s is the silt content of the surface material (%), S is vehicular speed (mph) and R is the number of rainy days. Estimates of s and S were made by the Soil Conservation Service and the Assistant County Administrator, respectively. R was obtained from published climatological data for the area.

$$EF = 0.49(25)(\frac{45}{30})(\frac{365-115}{365}) = 12.9 \text{ lbs/VMT}$$

Total county-wide TSP emissions are calculated from unpaved road miles given in Table IV-6 with an ADT of 25 vehicles per day.

$$12.9 \times 350.9 \times 25 \times 365 \times \frac{1}{2000} = 20{,}652.7 \text{ tons/yr.}$$

18. AGRICULTURAL TILLING

This source category includes the fugitive dust emissions resulting from the cultivation of land. There are no gaseous emissions. The emission factor, EF, (lbs/acre) given in AP-42 is expressed by:

$$EF = \frac{1.4s}{(PE/50)^2}$$

where s is the silt content of the surface soil (%) and PE is the Thornthwaite precipitation-evaporation index, 92 in Georgetown County as determined from AP-42.

The U. S. Department of Agriculture, Soil Conservation Service provided the following estimate of silt content:

s = 20-30% in flood plains, and,

s = 1 -10% in other areas.

It was suggested that s = 5% would be appropriate for the land that is devoted to agriculture(1).

The emission factor is calculated to be:

$$EF = \frac{1.4 \times 5}{(92/50)^2} = 2.1 \text{ lbs/acre tilled.}$$

The U. S. Department of Agriculture County Agent provided data concerning agricultural practices in the county. These data are summarized in Table IV-11.

TABLE IV-11

AGRICULTURAL DATA

CROP	ACRES PLANTED		AVG/NO CULTIVATIONS
Tobacco	2,000		5.5
Corn	11,000		4.0
Soybeans	2,500		4.5
Small Grains	3,000		3.0
Vegetables	600		4.0
Total	19,100	Weighted Mean	4.1

---

(1) Silt content in the unpaved road surface was estimated at 25%. It was suggested by the Conservation Service that the surface material would contain more finely divided material than that in farm land.

County-wide TSP emissions are calculated below.

$$2.1 \times 19{,}100 \times 4.1 \times \frac{1}{2000} = 82.2 \text{ tons/yr.}$$

19. CONSTRUCTION OPERATIONS

This source category includes the fugitive dust emissions resulting from the disturbing of the land surface from vehicular and other traffic in the course of construction activity. There are no gaseous emissions from this source category. The emission factor is based upon the number of acres under active construction for three categories:

- Residential building construction.
- Non-residential building construction.
- Non-building construction.

The AQMA analysis for Charleston determined, from methods described in AP-42, that an emission factor of 43 lbs/acre should be used for the first category and 430 lbs/acre for the other two categories.

The Georgetown County Development Plan provides estimates of additional acreage to be developed for the first two categories between 1970 and 1990. These estimates listed below, were based on a comprehensive survey of land use, population and employment and provide a basis for estimating construction acreage requirements. Units are in acres of construction land required per thousand population increase.

o Permanent residential	89.7
o Seasonal residential	27.5
o Commercial/institutional	73.9
o Industrial	45.9
Total	237.0

Emissions from residential and non-residential building construction can be calculated with those factors, the emission factors and the rate of population growth from Table II-1.

Residential building construction:

$$[89.7 + 27.5] \times \left[\frac{39,148 - 36,069}{5 \times 1,000}\right] \times 43 \times \frac{1}{2000} = 1.6 \text{ tons/yr.}$$

Non-residential building construction:

$$[73.9 + 45.9] \times \left[\frac{39,148 - 36,069}{5 \times 1,000}\right] \times 430 \times \frac{1}{2000} = 15.9 \text{ tons/yr.}$$

The Georgetown Land Use Plan Update states that in 1974, for the 201 planning area, 190.6 acres of developed land per thousand population were required. This compares with 209.5 acres per thousand population (seasonal residential is excluded) given above for the entire county. The 201 planning area is limted to Georgetown and the fringe area surrounding the city. It is to be expected that the county as a whole would show less intensive land use.

Non-building construction emissions were estimated from similar emissions in Berkeley County by the ratio of contract construction employment in the two counties from County Business Patterns, 1973:

$$\frac{407}{666} \times 21.5 = 13.1 \text{ tons/yr.}$$

Total particulate emissions are 30.6 tons/yr.

20. SMALL POINT SOURCES

This source category includes industrial point sources in the point source inventory, which because of size, are modeled as area sources to reduce computer costs.

Three such sources with TSP emissions of 2 tons/yr. or less were extracted from the point source inventory. Total emissions from these sources are as follows:

TSP	4.0 tons/yr.
SO_2	31.0 tons/yr.
CO	Negligible
HC	Negligible
NO_x	8.0 tons/yr.

21. EMISSIONS SUMMARY

County-wide baseline year emissions from all source categories are summarized in Table IV-12.

TABLE IV-12

1975 BASELINE YEAR EMISSIONS SUMMARY
(TONS/YR)

	SOURCE CATEGORY	TSP	SO$_2$	CO	HC	NO$_x$
1.	Residential Fuel Usage	7.3	27.3	19.7	3.0	20.7
2.	C/I Fuel Usage	0.9	10.5	2.2	0.5	9.6
3.	Agricultural Equipment	6.3	4.3	317.5	16.6	54.5
4.	Small Gasoline Engines	2.5	1.2	864.8	93.6	12.2
5.	Construction Equipment	0.9	1.1	3.3	1.0	14.2
6.	Railroad Locomotives	1.0	2.8	5.1	3.7	14.6
7.	Vessels	9.0	18.5	1,175.2	415.4	32.3
8.	Road Vehicles	153.0	46.1	17,232.5	2,481.9	1,353.8
9.	Aircraft	0.2	0.2	77.2	3.5	0.8
10.	On-Site Incineration	2.0	---	1.0	---	---
11.	Open Burning	8.0	---	26.4	6.4	0.9
12.	Structural Fires	0.1	---	0.4	---	---
13.	Wild Forest Fires	96.1	---	788.6	135.6	22.6
14.	Prescribed Burning	832.9	---	6,837.5	1,175.9	196.0
15.	Agricultural Burning	10.5	---	58.5	11.5	2.0
16.	Paved Roads (1)	696.3	---	---	---	---
17.	Unpaved Roads (1)	20,652.7	---	---	---	---
18.	Agricultural Tilling	82.2	---	---	---	---
19.	Construction Operations	30.6	---	---	---	---
20.	Small Point Sources	4.0	31.0	---	---	8.0
	Total	22,596.5	143.0	27,409.9	4,348.6	1,742.2

(1) Emissions have not been modified as discussed in Chapter VI, paragraph 5.

CHAPTER V

BASELINE YEAR EMISSIONS DISTRIBUTION

The county-wide emissions for each source category must be distributed among the several dispersion model grid areas. The following paragraphs discuss the methodology for allocation or assignment of county-wide emissions to the appropriate sub-county grid areas. We have used the term allocate to indicate distribution of total emissions to sub-county areas in accordance with the distribution of a related surrogate parameter; the term assignment is used where a discrete source is placed in the particular sub-county area in which it is located.

1. RESIDENTIAL FUEL USAGE

Emissions from this source category were allocated to census divisions (Figure II-1) in accordance with the dwelling size-fuel type distributions within each division. Further allocation to grid sub-county areas was made in accordance with the population distribution given in Table II-3.

2. COMMERCIAL/INSTITUTIONAL FUEL USAGE

Emissions from this source category were allocated to sub-county areas in accordance with the population distribution given in Table II-3.

3. AGRICULTURAL EQUIPMENT

The locations of agricultural activity were provided by the County Extension Agent. Approximately 90% of the activity is located in the far northwest part of the county beyond Route 127 with the remaining 10% in the Annieville area. A few sizeable farms are scattered in the remaining western portion of the county. Based on this information 90% of the emissions from agricultural equipment were allocated to the sub-county areas beyond Route 127 and 10% to the Annieville sub-county area. The following allocation factors were used:

Grid area 3.0	15%
Grid area 4.0	33%
Grid area 5.0	42%
Grid area 2.2	10%

4. SMALL GASOLINE ENGINES

Emissions from this source category were allocated in accordance with the population distribution given in Table II-3.

5. CONSTRUCTION EQUIPMENT

The only major heavy construction project underway in 1975 was the improvement of Route 17 south of Georgetown. Sixty percent of the emissions from this source category were assigned to sub-county area 27.2 where the improvements were being made. The remaining 40% of the emissions were allocated to sub-county areas in accordance with population growth from 1975 to 1980 to account for light residential and commercial construction projects.

6. RAILROAD LOCOMOTIVES

Emissions from this source category were assigned to the grid area in which the railroad tracks are located in accordance with the number of train miles in each such area.

7. VESSELS

Emissions from this source category were allocated to sub-county areas in accordance with the length of the waterway in each area separately for each class of commercial shipping. Emissions from miscellaneous vessels and terminal equipment were assigned to grid No. 22, the location of Georgetown shipping terminal.

8. ROAD VEHICLES

Emissions from this source category were allocated to sub-county areas in accordance with the distribution of VMT given in Table IV-6.

9. AIRCRAFT

Emissions from this source category were assigned to the sub-county areas in which the airports are located:

- Georgetown Airport - 0.15 tons/yr., grid 27.2
- Overton Field - 0.01 tons/yr., grid 9.2

10. ON-SITE INCINERATION

Emissions from this source category were assigned to the sub-county areas in which the incinerators are located:

- Winn Dixie Food Store - 1.00 tons/yr., grid 14.0
- Piggly-Wiggly Store - 1.00 tons/yr., grid 14.0

11. OPEN BURNING

Emissions from this source category resulted from two types of open burning, that associated with the burning of yard debris, leaves and prunings, and that associated with the burning of construction debris. Emissions from the first of these were allocated in accordance with 1975 population; those from the second, in accordance with population growth from 1975 to 1980 population. Population growth by sub-county area were taken from Table II-3.

12. STRUCTURAL FIRES

Emissions from this source category were allocated in accordance with the population distribution given in Table II-3.

13. WILD FOREST FIRES

In Georgetown County there are 389,793 acres of protected woodland, approximately 75% of the total county acreage. Within those protected woodlands, there were an estimated 254 wildfires in 1975 burning a total of 1,255.8 acres. According to the South Carolina Commission of Forestry the acres consumed were reasonably well distributed throughout the protected woodland. Consequently, emissions from this source category were allocated to sub-county areas in accordance with the distribution of protected woodland in each area.

14. PRESCRIBED BURNING

Emissions from this source category were allocated in accordance with the distribution of protected woodland in each sub-county area as for wild forest fires.

15. AGRICULTURAL BURNING

Emissions from this source category were allocated in accordance with the factors given in Section 3 of this chapter: Agricultural Equipment.

16. PAVED ROADS

Emissions from this source category were allocated in accordance with the distribution of road vehicle particulate exhaust emissions. This method is believed to be superior to allocation by VMT since it considers the increased number of tires on heavy duty vehicles.

17. UNPAVED ROADS

Emissions from this source category were allocated to sub-county areas in accordance with the product of population density and unpaved road miles.

18. AGRICULTURAL TILLING

Emissions from this source category were allocated in accordance with the factors given in Section 3 of this chapter: Agricultural Equipment.

19. CONSTRUCTION OPERATIONS

Emissions from this source category were allocated in accordance with the distribution of emissions from construction equipment.

20. SMALL POINT SOURCES

Emissions from this source category were assigned to the sub-county areas in which the point sources are located:

- Sampit Lumber - 2.00 tons/yr., grid 9.1
- American Cyanamid - 2.00 tons/yr., grid 18.0

21. EMISSIONS ALLOCATION SUMMARY

County-wide baseline year TSP emissions allocation is summarized in Table V-1 in AQDM input units of tons/day.

TABLE V-1

1975 BASELINE YEAR EMISSIONS ALLOCATION

GRID NO.	EMISSIONS (TONS/DAY)	GRID NO.	EMISSIONS (TONS/DAY)
1.1	1.328	15.0	0.058
1.2	1.755	16.0	0.008
2.1	0.683	17.0	0.027
2.2	2.056	18.0	0.066
3.0	0.587	19.0	0.014
4.0	3.154	20.0	0.004
5.0	4.614	21.0	0.036
6.0	0.045	22.0	0.069
7.0	0.026	23.0	0.123
8.1	1.873	24.0	2.678
8.2	1.212	25.0	3.162
9.1	1.647	26.1	0.688
9.2	1.493	26.2	0.310
10.1	1.607	27.1	3.746
10.2	5.575	27.2	2.030
11.1	3.764	28.0	2.542
11.2	8.810	29.1	0.871
12.0	3.159	29.2	1.004
13.0	0.059	29.3	1.009
14.0	0.033	Total(1)	61.950

(1) Total includes unmodified emissions from paved and unpaved roads as discussed in Chapter VI, paragraph 5.

CHAPTER VI

BASELINE YEAR ANALYSIS

The Air Quality Display Model (AQDM) modified to use the Briggs plume rise equation is an approved atmospheric dispersion model for determining the relationship between sources of air pollution and the resulting air quality. Based on the Gaussian dispersion of airborne material, AQDM calculates the contribution of all point and area sources at each receptor in a field of receptors for each of 576 meteorological conditions. These are then summed in accordance with the frequency of occurrence of each condition. An important advantage of AQDM over other available climatological models is its inclusion of a source contribution file. This computer code allows the operator to determine the source of the contaminant for selected receptors. A disadvantage of AQDM is its inability to estimate concentrations for any period other than annual average concentrations.

Data inputs to AQDM include the emission inventory, meteorological data, and for calibration purposes, air quality data. These are discussed below.

1. POINT SOURCE EMISSION INVENTORY

The 1975 inventory was provided by the DHEC for the EIS/P&R system maintained by Engineering-Science for the DHEC. The data were retrieved from the system, verified, checked and corrected. After all corrections were made a printout of the point source master file was forwarded to the DHEC for final approval.

There were 39 sources representing nine facilities in the inventory. Two of the sources had no TSP emissions. Eight of the sources, including the two on-site incinerators, all with emissions of from 1 to 3 tons/year, were extracted from the point source inventory and entered in the area source inventory. Total TSP emissions from the remaining 29 point sources were 4512. These point sources include only controlled points in the NEDS inventory. Other fugitive, uncontrolled sources may exist within the 9 facilities. However, a great majority of the point source emissions are located near Georgetown City, whereas the area sources are widely disbursed throughout the county. Point source emissions are summarized in Table VI-1.

TABLE VI-1

POINT SOURCE EMISSION SUMMARY

FACILITY	NO. SOURCES	GRID NO.	EMISSIONS (TONS/DAY)
M & T Chemicals	2	9.2	0.033
International Paper	16	11.2	9.788
Georgetown Ferreduction	4	18.0	0.244
Georgetown Steel	7	18.0	0.551
S. C. Public Service	1	27.2	1.515
Sampit Lumber	1	9.1	0.047
American Cyanamid	1	18.0	0.184
Total	32		12.262

2. AREA SOURCE EMISSION INVENTORY

The area source emission inventory by grid square was summarized in Table V-1. Figures VI-1 and VI-2 show the emission density (tons/km^2-yr) for all area sources. The highest densities are in the Georgetown City fringe area reflecting the method of allocating emissions from unpaved roads: proportional to the product of unpaved road miles and populatuon density. The relatively high emission density in downtown Georgetown City results from paved road and automobile exhaust emissions. If point sources are added into emission density calculations, values greater than 400 tons/km^2-year result in grid 18.0.

As shown in Table IV-12, automobile related TSP emissions, those from the exhaust, paved roads and unpaved roads account for 95% of total emissions.

Figure VI-1.

GEORGETOWN COUNTY UNMODIFIED
AREA SOURCE EMISSION DENSITY

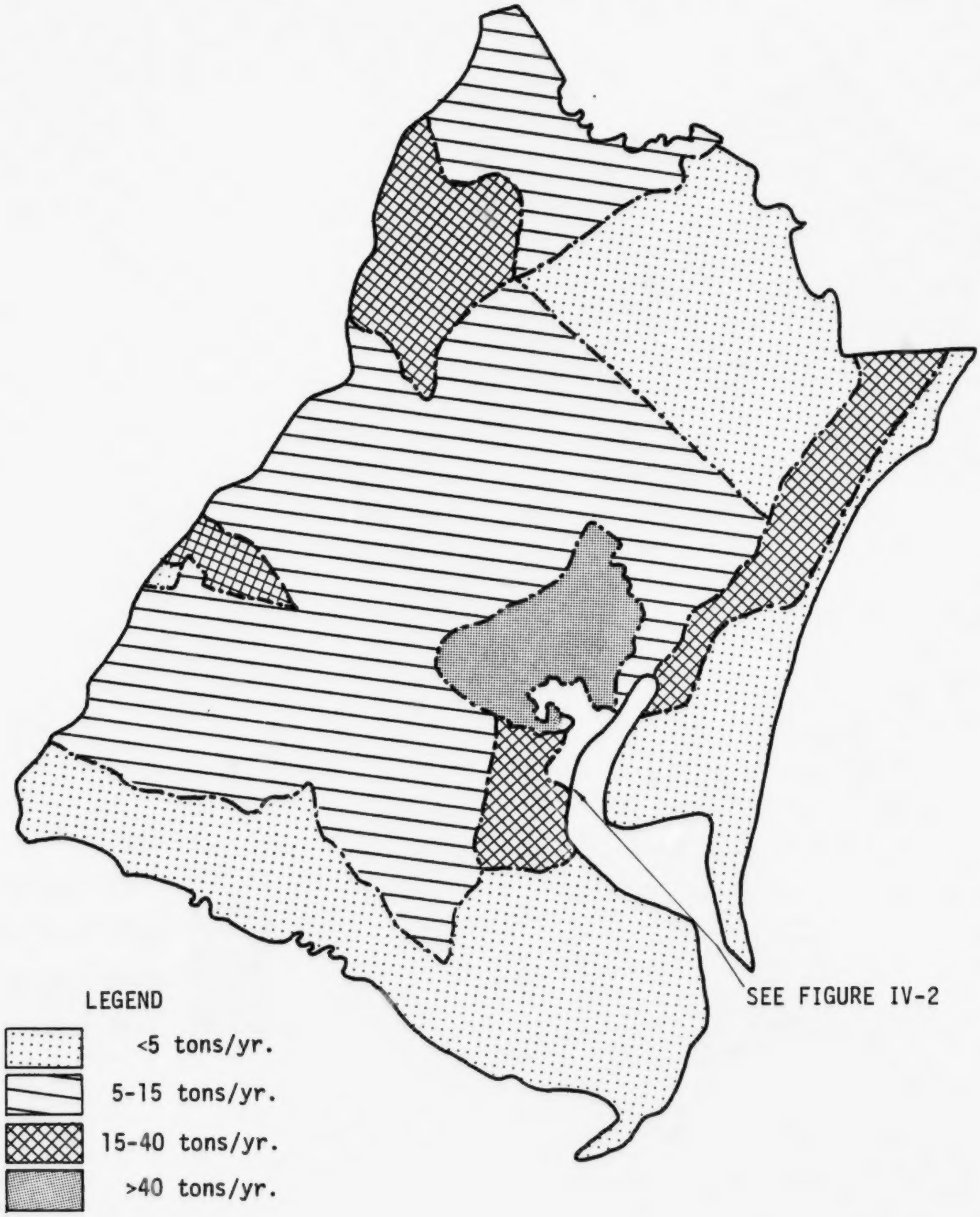
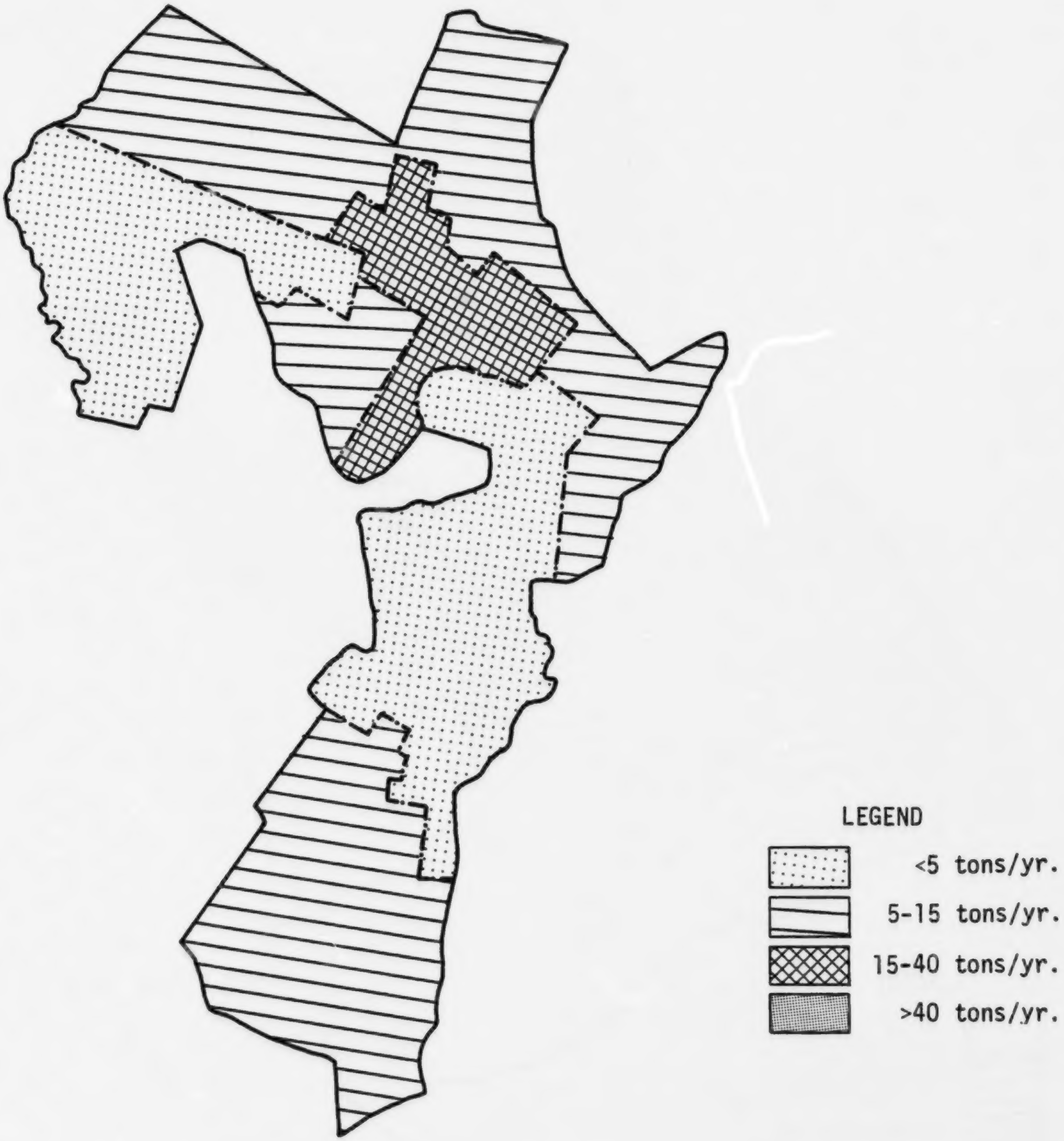


Figure VI-2.

GEORGETOWN CITY UNMODIFIED AREA
SOURCE EMISSION DENSITY



Unpaved roads alone account for 91% of the emissions. The method for estimating and allocating both paved and unpaved road emissions is not based on proven methods or hard data. This problem will be addressed further in the discussion of modeling results that follows.

3. METEOROLOGICAL DATA

There were no meteorological data available from an airport in Georgetown County which included the required three way joint frequency distributions of wind direction, wind speed and stability class (STAR program). Such data were available from two reasonably appropriate airports, Myrtle Beach and Charleston. These data are summarized in Tables VI-2 and VI-3: January 1966 through December 1970 for Myrtle Beach and January 1960 through December 1964 for Charleston.

Both meteorological summaries show a bimodal distribution of wind direction with preferred directions from the north through north-northeast and from the south through south-southwest. The mean stability conditions for the two airports are very similar, 4.1 for Charleston and 4.2 for Myrtle Beach. It is only in wind speed that significant differences appear. The average wind speed at Charleston is 50% greater than that at Myrtle Beach.

There is no real rationale for selecting one meteorological data set over the other for modeling purposes. Rather arbitrarily we have chosen Myrtle Beach. It is closer to the centroid of Georgetown County, and the lower wind speed results in a conservative estimate of concentrations in an analysis for which no model calibration statistics are determined.

Further, since the Myrtle Beach meteorological data are not known to truly represent the meteorological regime for Geoegetown County, it was believed unnecessary to use 1975 data for the baseline year analysis. Consequently, the five-year mean conditions for 1966 through 1970 were used for both model calibration and projected air quality estimates.

TABLE VI-2

METEOROLOGICAL DATA SUMMARY FOR MYRTLE BEACH

	WIND SPEED (KNOTS)								STABILITY CLASS				
	0-3	4-6	7-10	11-16	17-21	>21	TOTAL	AVG WS	A	B	C	D	E/F
N	6.5	3.3	2.4	0.9	0.1	0	13.2	5.4	0.1	0.8	1.3	2.1	9.1
NNE	3.0	2.5	1.9	0.4	0	0	7.8	5.8	0	0.5	0.8	1.3	5.1
NE	2.0	1.9	1.3	0.2	0	0	5.4	5.7	0	0.4	0.6	0.9	3.3
ENE	1.3	1.1	1.1	0.2	0	0	3.7	6.1	0	0.3	0.6	0.8	1.8
E	2.2	2.4	2.4	0.4	0	0	7.4	6.3	0.1	0.8	1.4	1.4	3.4
ESE	1.6	1.7	1.3	0.1	0	0	4.7	5.7	0.1	0.9	1.0	0.6	1.7
SE	1.3	1.3	0.9	0.1	0	0	3.6	5.6	0.1	0.8	0.8	0.5	1.3
SSE	1.7	1.8	1.3	0.1	0	0	4.9	5.7	0.1	1.0	1.1	0.7	1.8
S	2.8	2.8	3.7	1.2	0	0	10.5	7.1	0.1	1.2	2.3	2.2	4.3
SSW	2.7	2.3	2.0	0.7	0	0	7.7	6.4	0	0.3	0.9	1.3	5.5
SW	2.8	1.8	0.8	0.1	0	0	5.5	4.7	0.1	0.3	0.4	0.5	4.5
WSW	2.3	1.5	0.8	0.1	0	0	4.7	4.9	0.1	0.5	0.5	0.6	3.2
W	3.3	2.4	1.6	0.4	0	0	7.7	5.6	0.1	1.0	1.1	1.0	4.6
WNW	1.5	1.3	1.0	0.4	0	0	4.2	6.4	0.1	0.5	0.7	0.8	2.3
NW	1.1	1.0	0.9	0.3	0.1	0	3.4	6.7	0.1	0.3	0.5	0.6	1.9
NNW	2.7	1.2	0.9	0.5	0.1	0	5.4	5.8	0.1	0.4	0.6	0.8	3.6
TOTAL	38.8	30.3	24.3	5.1	0.3	0	99.8	4.9	1.1	10.0	14.8	16.1	57.4

TABLE VI-2 (CONT'D)

METEOROLOGICAL DATA SUMMARY FOR MYRTLE BEACH

STABILITY CLASS	WIND SPEED (KNOTS) 0-3	4-6	7-10	11-16	17-21
A	0.5	0.6	0	0	0
B	3.7	4.1	2.5	0	0
C	1.8	4.7	7.6	0.8	0
D	1.2	4.8	5.9	3.9	0.3
E/F	31.7	16.1	8.2	1.5	0.1

TABLE VI-3

METEOROLOGICAL DATA SUMMARY FOR CHARLESTON

	WIND SPEED (KNOTS)								STABILITY CLASS				
	0-3	4-6	7-10	11-16	17-21	>21	TOTAL	AVG WS	A	B	C	D	E/F
N	1.8	3.3	2.8	1.4	0.2	0	9.5	7.6	0.1	0.5	0.9	3.9	4.1
NNE	1.6	3.3	3.8	2.1	0.1	0	10.9	8.0	0.1	0.5	1.3	5.1	4.0
NE	1.1	2.2	2.6	1.1	0.1	0	7.1	7.7	0.1	0.3	0.9	3.3	2.4
ENE	0.7	1.6	1.6	0.8	0	0	4.7	7.7	0	0.3	0.6	2.3	1.5
E	0.5	1.1	1.3	0.7	0.1	0	3.7	8.1	0	0.2	0.4	1.7	1.2
ESE	0.6	1.1	1.3	0.7	0	0	3.7	8.0	0	0.2	0.6	1.7	1.2
SE	0.6	1.2	1.2	0.6	0	0	3.6	7.6	0	0.2	0.5	1.6	1.3
SSE	0.7	1.4	1.4	0.7	0.1	0	4.3	7.7	0	0.2	0.6	1.8	1.7
S	1.6	2.8	2.6	1.5	0.2	0	8.7	7.8	0.1	0.3	0.8	3.5	4.1
SSW	1.3	2.8	2.8	1.8	0.3	0.1	9.1	8.3	0.1	0.4	0.8	3.8	3.9
SW	0.8	2.0	2.7	1.2	0.1	0	6.8	8.1	0.1	0.4	0.8	2.6	3.0
WSW	0.7	1.8	2.6	1.3	0.2	0	6.6	8.6	0.1	0.5	1.0	2.5	2.4
W	0.5	1.4	2.4	1.4	0.2	0.1	6.0	9.3	0	0.4	1.1	2.5	2.1
WNW	0.5	1.1	1.9	1.4	0.3	0	5.2	9.6	0	0.4	0.9	2.5	1.4
NW	0.5	1.2	1.3	0.7	0.1	0	3.8	8.2	0	0.3	0.6	1.5	1.4
NNW	1.1	2.2	1.7	1.0	0.1	0	6.1	7.7	0.1	0.4	0.7	2.4	2.7
TOTAL	14.6	30.5	34.0	18.4	2.1	0.2	99.8	7.4	0.8	5.5	12.5	42.7	38.4

TABLE VI-3 (CONT'D)

METEOROLOGICAL DATA SUMMARY FOR CHARLESTON

STABILITY	WIND SPEED (KNOTS)					
CLASS	0-3	4-6	7-10	11-16	17-21	>21
A	0.3	0.5	0	0	0	0
B	1.1	2.2	2.1	0	0	0
C	0.5	3.0	7.5	1.5	0	0
D	1.0	5.5	16.9	16.8	2.2	0
E/F	11.6	19.2	7.6	0	0	0

4. AIR QUALITY DATA

For the baseline year model run air quality data are required in order that the regression equation relating observed and calculated air quality may be determined for use in the planning years analyses. These data, 1975 annual arithmetic mean concentrations (μg/m^3) for five monitoring stations were provided by the DHEC. The locations of the stations are shown on Figure VI-3. The locations are shown on the Universal Transverse Mercator (UTM) geocoding system employed in the AQDM.

The observed air quality data at the five monitoring stations for the past five years (where available) are summarized in Table VI-4.

TABLE VI-4

OBSERVED AIR QUALITY DATA (μg/m^3)

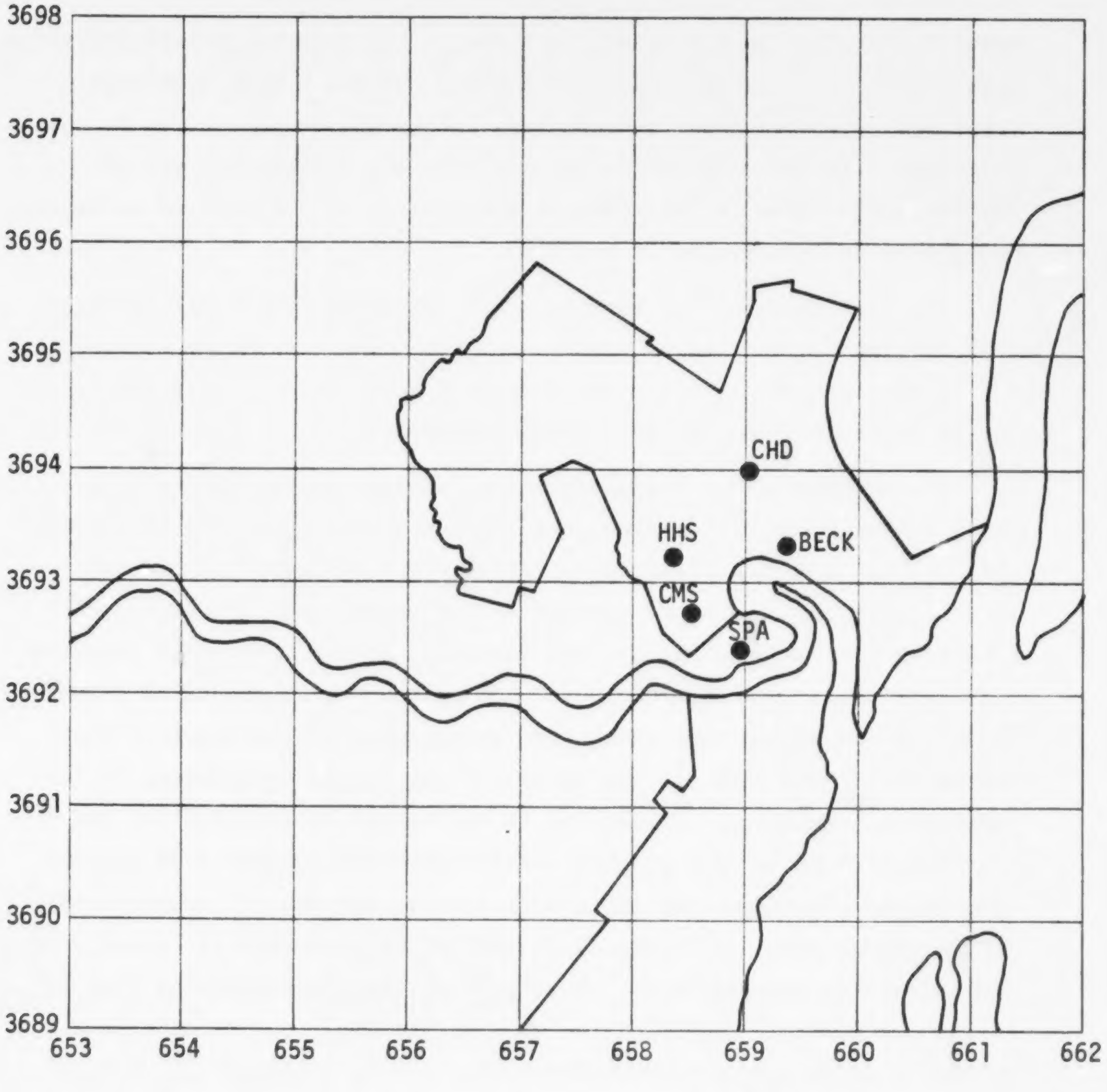
MONITORING STATION	AAM(1) 1975	AGM(2) 1975	1974	1973	1972	1971
County Health Department (CHD)	78	73	72	67	62	61
Howard High School (HHS)	78	70	80	93	84	77
Continuous Monitoring Station (CMS)	85	77	76	104	--	--
Dr. Beck (BECK)	62	55	62	--	--	--
State Ports Authority (SPA)	55	48	49	--	--	--

(1) Annual arithmetic mean - basis for modeling analysis.

(2) Annual geometric mean - basis for ambient air quality standards, 75 μg/m^3 primary standard, 60 μg/m^3 secondary standard.

Figure VI-3.

LOCATIONS OF MONITORING STATIONS



5. BASELINE YEAR MODEL CALIBRATION

The purpose of the baseline year model calibration is to relate observed and model calculated air quality in order that planning year air quality may be estimated from the projected emission inventories. With adequate data input, meteorological, air quality and inventories, one would expect a rather high correlation between observed and calculated values, limited only by the inherent weakness of the model itself. In such a case, the slope of the regression line relating observed and calculated values is near 1.0, with a Y axis intercept (observed concentrations) representing background concentration of the pollutant. If low correlation results from the calibrating effort, the regression line is not accepted and a slope of 1.0 with an estimated background or Y-intercept is assigned.

Figure VI-4 shows the results of the baseline year model calibration run for the Georgetown County analysis. The regression line, $Y = 151.7 - 1.228X$, is based on a negative correlation coefficient.(1) The computer printout is included as Appendix B.

The statistics for the calibration run are unsatisfactory. In other analysis areas,(2) manipulation of the emission factors for paved and unpaved roads has resulted in satisfactory calibration. In general, such manipulation increased emissions from paved roads and decreased emissions from unpaved roads. For instance, in the Charleston analysis good correlation was obtained using 50% of the calculated unpaved road emissions and 200% of the paved road emissions. Manipulation of the Georgetown County data did not result in any marked improvement in the regression statistics. Therefore, it was agreed by the DHEC and the EPA Project Officer that the Charleston paved and unpaved road factors were the best estimate for these emissions in Georgetown. Consequently, TSP emissions shown in Tables IV-12 and V-1 were doubled for paved roads and halved for unpaved roads. Furthermore, for the regression line a

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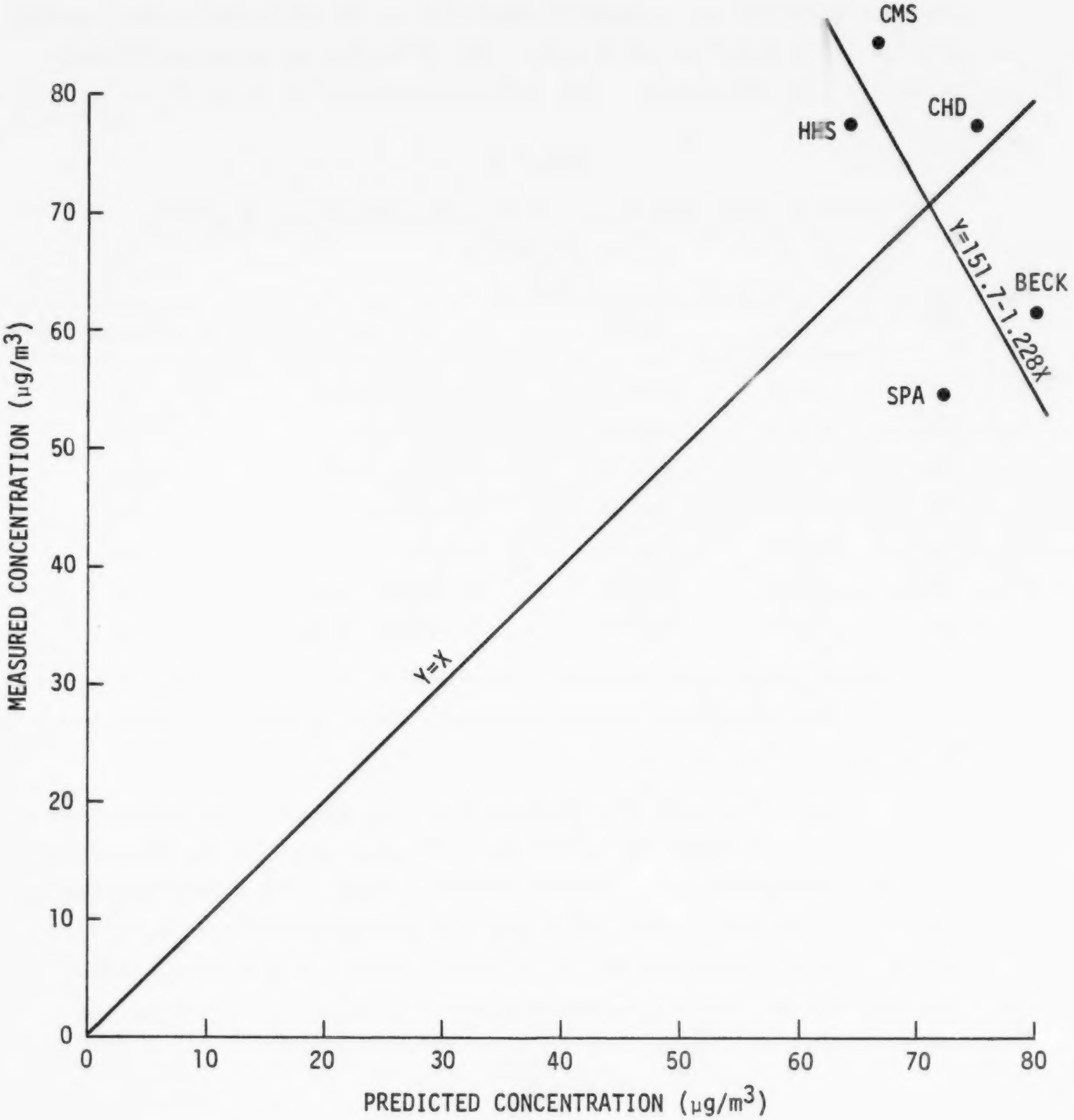
(1) Resulting in the astonishing conclusion that increased emissions would result in improved air quality.

(2) See the analysis reports for Charleston, S.C., Greenville, S.C., Louisville, Ky., Charlotte, N.C., and Winston Salem, N.C.

Figure VI-4.

BASELINE YEAR CALIBRATION REGRESSION LINE



slope of 1.0 and an intercept of 20 μg/m^3 were assigned, values derived from the Charleston analysis.

6. BASELINE YEAR MODEL RESULTS

With the inventory modifications and statistics discussed above, the model was exercised with the results shown in Figure VI-5. The computer printout is included in Appendix C. In addition to the concentration field shown in the figure, concentrations at seven additional receptors were calculated. The results are given in Table VI-5.

TABLE VI-5

BASELINE YEAR CONCENTRATION AT SEVEN ADDITIONAL RECEPTORS

(μg/m^3)

NO	EAST	NORTH	LOCATION	CONCENTRATION
101	685.0	3720.0	Myrtle Beach	32
102	633.0	3703.0	Andrews	31
103	655.0	3730.0	William Hill	33
104	670.0	3690.0	North Inlet	38
105	644.0	3693.0	Sampit	38
106	660.0	3710.0	St Marys Church	42
107	680.0	3710.0	Murrells Inlet	36

The calculated versus observed concentrations are shown in Table VI-6.

As can be seen from Figure VI-5, the area of high concentration is oriented north-south along UTM east 659 very close to the Georgetown Steel and Georgetown Ferreduction sources. Table VI-7 summarizes the source contribution to the two highest concentration receptors, No. 65 at 659E, 3693N and No. 66 at 659E, 3694N. All sources which contribute 1.00% of total concentration or greater are listed in the table.

Figure VI-5.

1975 CALCULATED CONCENTRATION FIELD ($\mu g/m^3$)
ALL POINT AND AREA SOURCES
20 $\mu g/m^3$ BACKGROUND INCLUDED

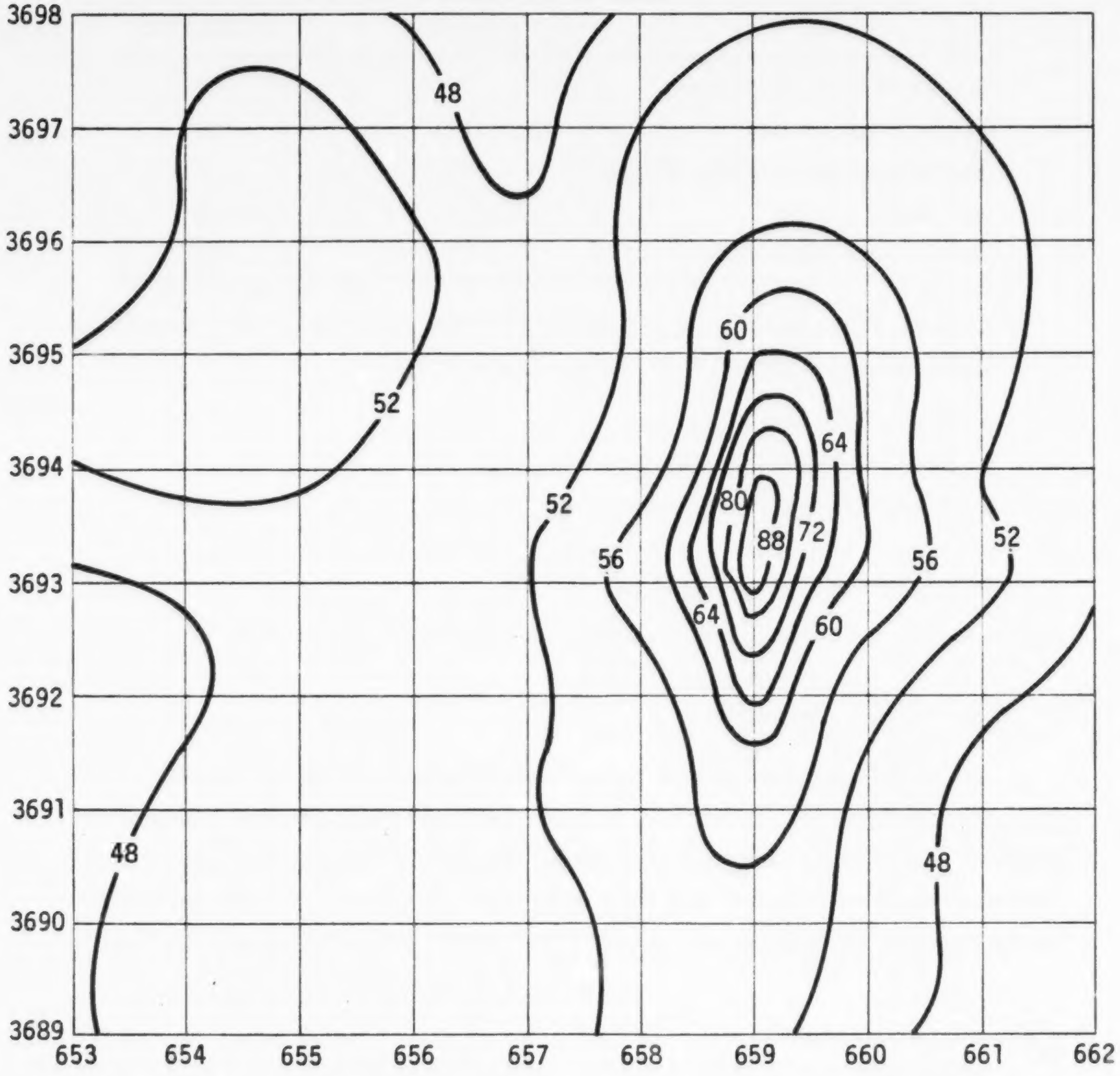


TABLE VI-6

CALCULATED VS OBSERVED CONCENTRATION

($\mu g/m^3$)

	OBSERVED	CALCULATED
County Health Department	78	85
Howard High School	78	64
Continuous Monitoring Station	85	72
Dr. Beck	62	76
State Ports Authority	55	74

Figures VI-6 through VI-10 show the concentration fields resulting from different combinations of source categories.

o VI-6	All area sources
o VI-7	Unpaved roads only
o VI-8	Paved roads only
o VI-9	All other area sources
o VI-10	All point sources

The computer printouts are included in Appendices D through F(1).

7. DISCUSSION OF RESULTS

The modeling results are not as unsatisfactory as one might judge from the calibration attempt. It must be realized that all the monitoring stations and the primary point sources listed in Table VI-7 are contained within an area of slightly more than a half mile, approximately three-fourths of a mile on a side. The AQDM is not designed for such a

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(1) Only three additional computer runs were required for the five source category breakdown. Figure VI-9 results from subtracting VI-7 + VI-8 from VI-6. Figure VI-10 results from subtracting VI-6 from VI-5.

TABLE VI-7

SOURCE CONTRIBUTIONS TO TWO HIGHEST CONCENTRATION RECEPTORS

RECEPTOR NO. 65			RECEPTOR NO. 66		
SOURCE	CONTRIBUTION		SOURCE	CONTRIBUTION	
	g/m^3	%		g/m^3	%
Tract 5.0	1.19	1.32	Tract 5.0	1.21	1.42
Tract 10.2	4.35	4.85	Tract 10.2	4.46	5.22
Tract 11.2	4.50	5.01	Tract 11.1	0.88	1.03
Tract 12.0	2.54	2.83	Tract 11.2	4.21	4.92
Tract 14.0	1.62	1.80	Tract 12.0	2.75	3.22
Tract 18.0	5.69	6.34	Tract 13.0	1.54	1.80
Tract 25.0	1.01	1.12	Tract 14.0	6.63	7.76
Tract 27.1	1.28	1.42	Tract 17.0	1.01	1.18
Tract 27.2	1.47	1.63	Tract 18.0	1.76	2.07
TOTAL AREA	23.65	26.32	Tract 25.0	0.99	1.16
			Tract 27.1	1.28	1.49
GT Ferreduction	2.37	2.64	Tract 27.2	1.45	1.70
GT Ferreduction	7.08	7.88	TOTAL AREA	28.17	32.97
GT Ferreduction	5.29	5.90			
GT Steel	5.71	6.36	GT Ferreduction	1.91	2.24
GT Steel	12.74	14.19	GT Ferreduction	2.22	2.60
TOTAL POINT	33.19	36.97	GT Ferreduction	2.35	2.75
			GT Steel	2.47	2.89
Background	20.00	22.28	GT Steel	14.92	17.46
All Other sources	12.95	14.43	Am. Cyanamid	2.00	2.34
GRAND TOTAL	89.79	100.00	TOTAL POINT	25.87	30.28
			Background	20.00	23.41
			All Other Sources	11.41	13.34
			GRAND TOTAL	85.45	100.00

Figure VI-6.

1975 CALCULATED CONCENTRATION FIELD (μg/m³)
ALL AREA SOURCES

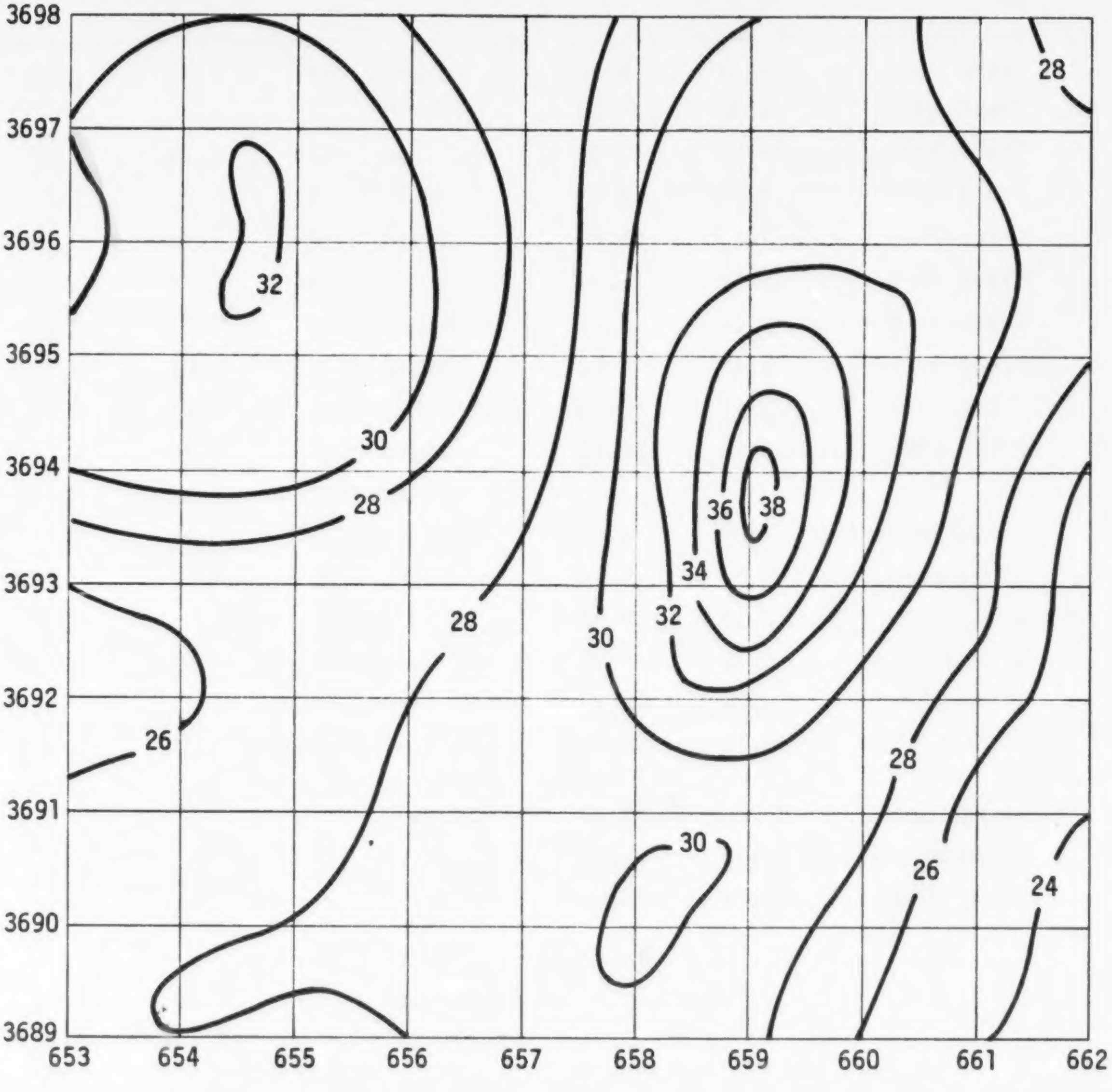


Figure VI-7.

1975 CALCULATED CONCENTRATION FIELD ($\mu g/m^3$)
UNPAVED ROADS ONLY

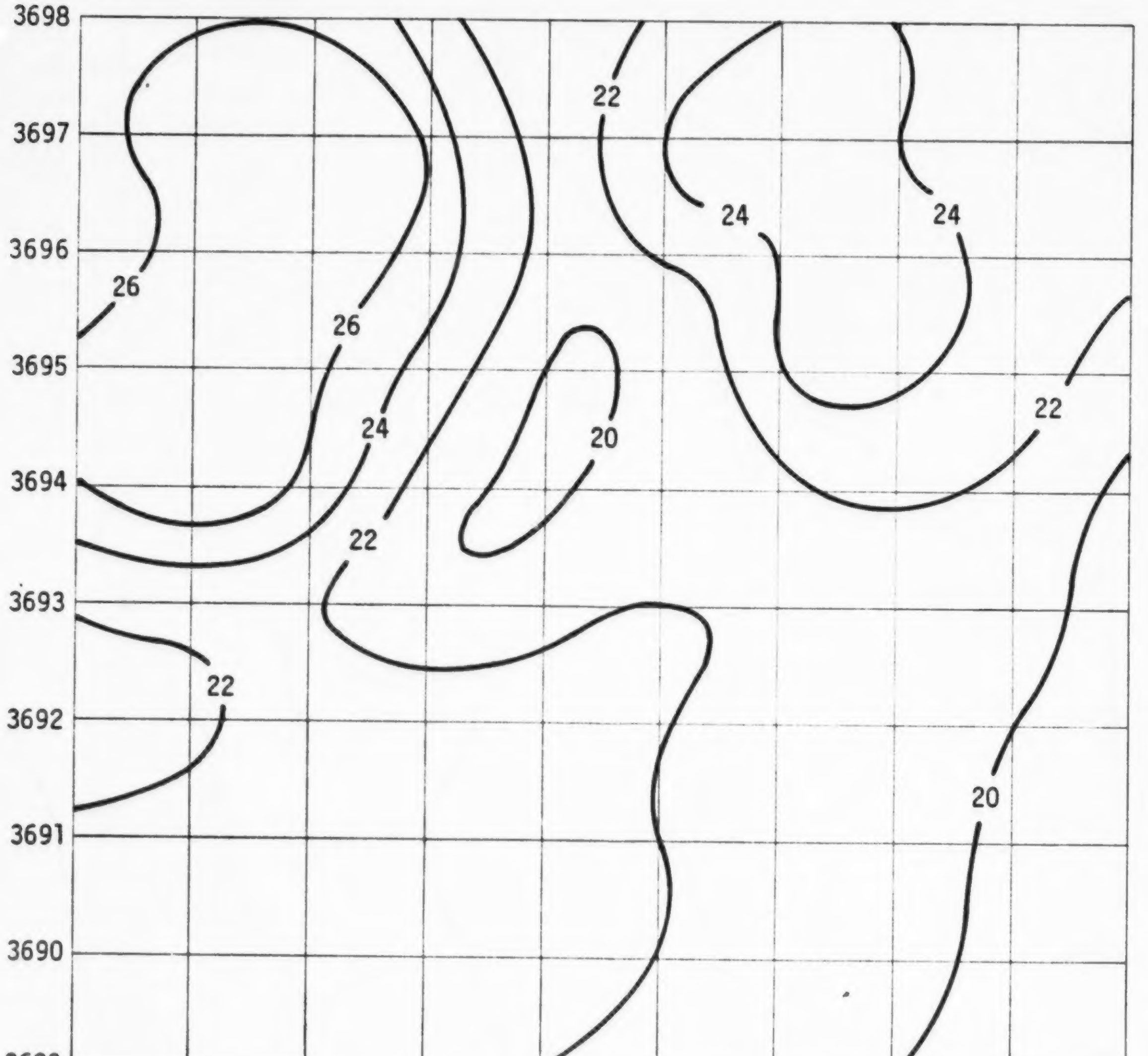


Figure VI-8.

1975 CALCULATED CONCENTRATION (μg/m³)
PAVED ROADS ONLY

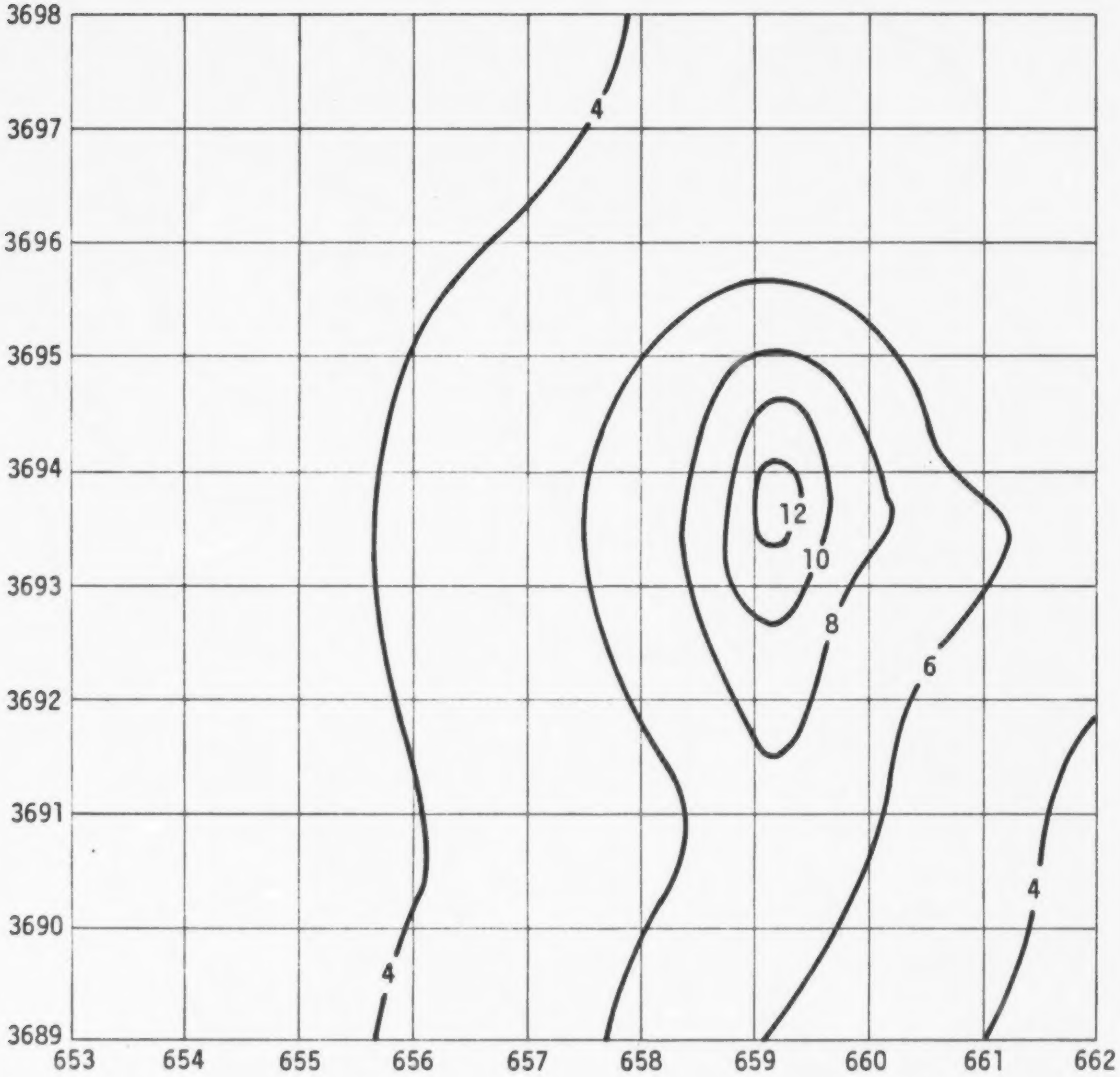


Figure VI-9.

1975 CALCULATED CONCENTRATION FIELD ($\mu g/m^3$)
ALL AREA SOURCES EXCEPT PAVED AND UNPAVED ROADS

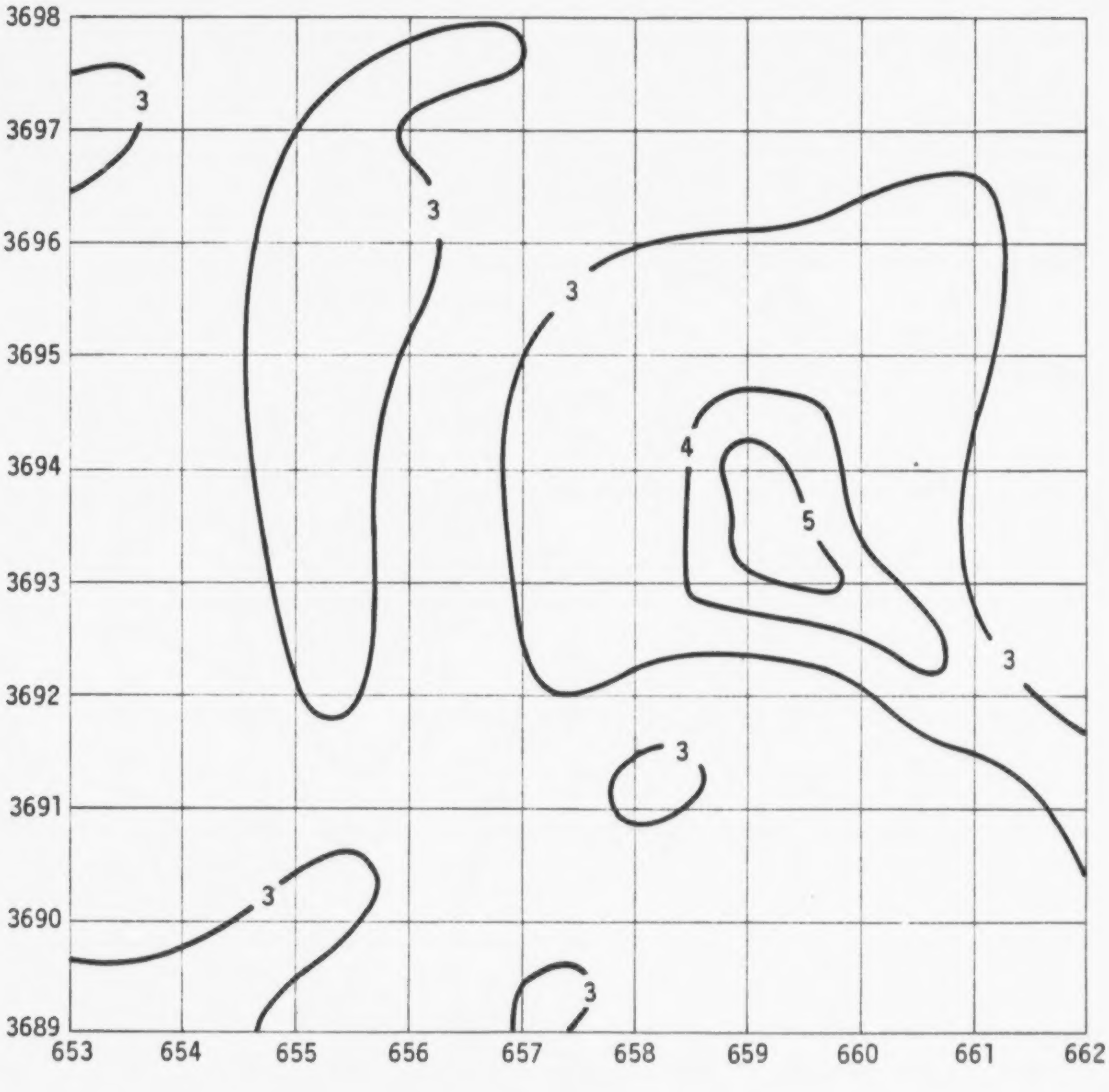
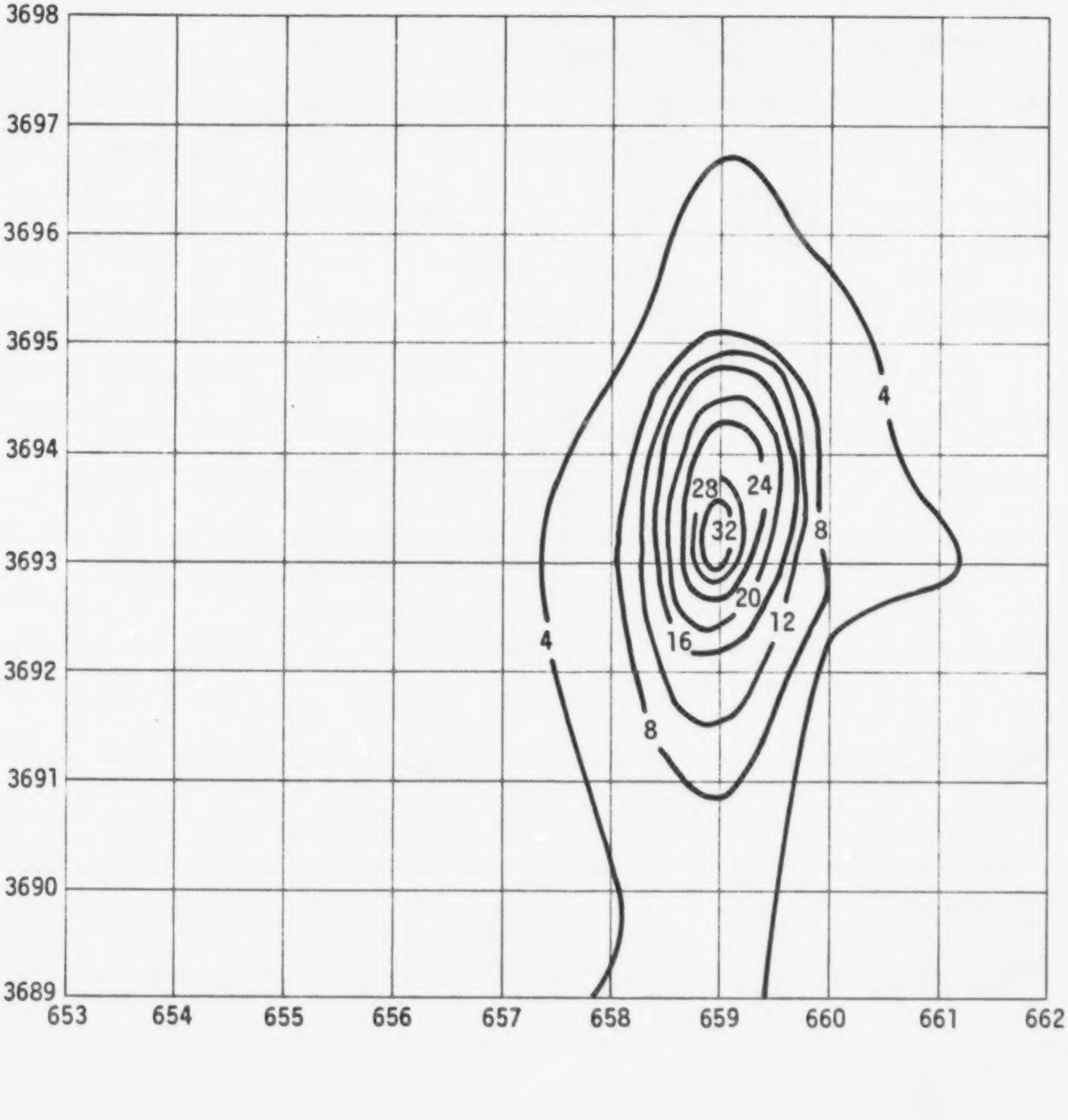


Figure VI-10.

1975 CALCULATED CONCENTRATION FIELD ($\mu g/m^3$)
ALL POINT SOURCES



microanalysis. Furthermore, the meteorological inputs to the model were not known to represent the Georgetown distribution. In particular, it appears that the north-south axis of the concentration field does not agree with the prevailing wind direction in the Georgetown area.

These difficulties can be partially overcome for a small area by integration of the calculated and observed concentration fields, thereby eliminating the wind direction dependency. Such area integration can be estimated by the sum of the concentrations or averages in Table VI-6. The average observed concentration was 71.6 $\mu g/m^3$ while the average calculated concentration was 74.2 $\mu g/m^3$. This indicates that the average values of the calculated concentrations in the impacted area closely represent observed concentrations. It is only in the concentration pattern that an error is apparent.

With this observation, it is reasonable to accept the validity of the source contributions to the impacted area highlighted in Table VI-7. It is apparent that approximately one-third of the air quality impact results from known (that is inventoried) emissions from the steel works and another one-third from paved and unpaved roads. All other sources and background account for the last one-third.

The results further indicate that the only area in the County in which air quality standards are jeopardized is downtown Georgetown City.

Using techniques developed by Larsen,(1) the highest annual geometric mean and second highest one-hour concentration have been calculated:

Highest annual geometric mean	-	78 $\mu g/m^3$
Second highest one-hour concentration	-	323 $\mu g/m^3$

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(1) A Mathematical Model for Relating Air Quality Measurements to Air Quality Standards, U. S. EPA 1971.

CHAPTER VII

PROJECTED EMISSIONS INVENTORY

This chapter discusses the data requirements, sources, availability, and methodology for projecting county-wide source emissions to the 1980 and 1985 planning years. Several source categories are not projected to change over the decade. Such categories are those related to agricultural and silvicultural practices in the county:

- Agricultural Equipment
- Wild Forest Fires
- Prescribed Burning
- Agricultural Burning
- Agricultural Tilling

It was determined in Chapter IV, Section 19, that 209.5 acres of development land per 1000 population increase are required. Over the decade, with a population increase of 6929, 1452 acres will be developed not counting that acreage developed to house the increase in seasonal population. The seasonal population increase of 16,177 will require development of an additional 445 acres. These modest requirements in newly developed land and the expected location of the developments will cause little encroachment upon areas currently devoted to farming or woodland.

Although there is adequate land available for increased agricultural activity, there is no reason at this time to expect a significant increase in farm acreage. During the past, Georgetown County agricultural practices have varied widely. It is difficult to predict what changes may occur in the future. Today the apparent tendency for economic growth in the County is pointed toward industrial and recreational expansion. It is believed that both agricultural and silviculture practice and level of activity will remain essentially constant over the decade and that emissions related to these practices will not change.

There is little doubt that large growth in recreation and tourism (as manifested by the near doubling of seasonal population shown in Table II-2) will occur. Most of this growth is expected in the Waccamaw census division. Increased emissions of TSP will accompany the growth as general human activity increases. Such activity will result in large traffic volumes and construction effort. However, because of the seasonal nature of the projections, emissions from other sources will not increase at the same rate and should reflect the more moderate permanent population and general economic projections.

There are four development possibilities which, if completed, might have a significant impact upon air quality:

- Construction of a high bridge over the Sampit
- Improvement of shipping facilities, channels and turning basins
- Introduction of heavy industry south of the Sampit
- Development of a shore-based infrastructure to support off-shore oil exploration

The result of these developments cannot be predicted at this time; and, since each, if affected, would require an environmental impact assessment, no attempt has been made to project area source emissions with such development possibilities factored in. Rather, economic expansion is based upon the employment projections summarized in Table II-4.

1. RESIDENTIAL FUEL USAGE

Projected emissions from this source category depend upon the projected number of dwellings and the dwelling size distribution and fuel type distribution. Table VII-1, taken from the Regional Development Impact Matrix summarizes the 1975 housing stock. If it is assumed that the number of persons/dwelling unit remains constant, the projected number of dwelling units can be calculated from projected population by census districts given in Table II-3. These projections are also shown in Table VII-1.

TABLE VII-1

BASELINE YEAR AND PROJECTED HOUSING STOCK

	POPULATION	1975 NO. DWELLINGS	PERSONS/ DWELLING	1980 NO. DWELLINGS	1985 No. DWELLINGS
Georgetown Urban Fringe	6050	1608	3.76	1795	2088
Andrews Urban Fringe	1034	292	3.54	331	370
Waccamaw Neck	3129	2086	1.50	2875	3875
Rural Areas	11822	3216	3.68	3452	3582
Andrews and Georgetown Cities	14034	4014	3.50	4060	4241
Total	36069	11216	3.22	12513	14156

Although the percentage of multi-family dwellings has increased over the past several years, Georgetown County housing is still predominately single family. Ignoring the possible trend in increasing multi-family dwellings (and the small increase in heating efficiency) will result in insignificant errors in fuel consumption.

For the baseline year the mean emission rates per dwelling unit are shown on Table VII-2. These mean emission rates are expected to change as a result of changing fuel type distribution. The assumptions concerning projected fuel type distribution are listed below:

1. There will be no increase in the number of dwellings heated by natural gas or LPG.
2. The number of dwellings heated by coal will decrease by 50% in 1980 and by 100% in 1985.
3. The number of dwellings heated by wood will decrease by 25% in 1980 and by 50% in 1985.
4. New dwellings and those converting from coal or wood will be heated 50% by distillate oil and 50% by electricity.

With these assumptions the projected mean emission rates/dwelling unit have been calculated and are listed in Table VII-2.

TABLE VII-2

MEAN EMISSION RATES (LBS/DWELLING UNIT-YR)

	1975	1980	1985
TSP	1.30	1.01	0.74
SO_2	4.87	4.70	4.52
CO	3.51	2.51	1.68
HC	0.53	0.40	0.28
NO_x	3.69	3.59	3.47

Baseline year and projected emissions are summarized in Table VII-3.

TABLE VII-3

BASELINE YEAR AND PROJECTED EMISSIONS FROM RESIDENTIAL FUEL USAGE (TONS/YR)

	1975	1980	1985
TSP	7.3	6.3	5.2
SO_2	27.3	29.4	32.0
CO	19.7	15.7	11.9
HC	3.0	2.5	2.0
NO_x	20.7	22.5	24.6

2. COMMERCIAL/INSTITUTIONAL FUEL USAGE

Fuel usage on a Btu basis is projected to increase in accordance with the non-manufacturing employment growth given in Table II-4. In converting fuel usage to emissions it was assumed that all growth would be in the use of distillate oil. Baseline year data and projected emissions are summarized in Table VII-4.

TABLE VII-4

BASELINE YEAR DATA AND PROJECTED EMISSIONS FROM COMMERCIAL/INSTITUTIONAL FUEL USAGE

	1975	1980	1985
Non-Mfg. Employment	5923	6514	7364
Emissions (tons/year)			
TSP	0.9	1.0	1.1
SO_2	10.5	11.8	13.7
CO	2.2	2.4	2.8
HC	0.5	0.6	0.6
NO_x	9.6	10.6	12.1

3. SMALL GASOLINE ENGINES

Emissions from this source category are projected to increase in accordance with the population growth factors given in Table II-2. Baseline year data and projected emissions are summarized in Table VII-5.

TABLE VII-5

BASELINE YEAR DATA AND PROJECTED EMISSIONS FROM SMALL GASOLINE ENGINES

	1975	1980	1985
Population Factor	1.000	1.085	1.192
Emissions (tons/year)			
TSP	2.5	2.7	3.0
SO_2	1.2	1.3	1.4
CO	864.8	938.3	1030.8
HC	93.6	101.6	111.6
NO_x	12.2	13.2	14.5

4. CONSTRUCTION EQUIPMENT

Emissions from this source category are projected to increase in accordance with the growth in contract construction employment given in Table II-4. Baseline year data and projected emissions are summarized in Table VII-6.

TABLE VII-6

BASELINE YEAR DATA AND PROJECTED EMISSIONS FROM CONSTRUCTION EQUIPMENT

	1975	1980	1985
Construction Employment	467	501	552
Emissions (tons/year)			
TSP	0.9	1.0	1.1
SO_2	1.1	1.2	1.3
CO	3.3	3.5	3.9
HC	1.0	1.1	1.2
NO_x	14.2	15.2	16.8

5. RAILROAD LOCOMOTIVES

The year 1975 was depressed for railroad freight traffic, decreasing by 12.6% in the Southern District of the Association of American Railroads. On the other hand, for the ten year period through 1974, a steady increase in freight traffic occurred, averaging 4.8% per year, considerably higher than the national 3% average gain over the same period of time.

Emissions from locomotives operating on the mainline of the Seaboard Coast Line are projected to increase at the historical rate of 4.8% per year from a 1974 base year. Emissions from the line between Andrews and Georgetown are projected to double by 1980 to accommodate coal shipments for the expanded South Carolina Public Service Authority power plant and then to increase at a rate of 4.8% per year from 1980 to 1985. Baseline year data and projected emissions are summarized in Table VII-7.

TABLE VII-7

BASELINE YEAR DATA AND PROJECTED EMISSIONS FROM RAILROAD LOCOMOTIVES

	1974(1)	1980	1985
Railroad Freight Factor	1.00	1.288	1.528
Emissions (tons/year)			
TSP	1.1	1.6	1.9
SO_2	3.2	4.8	5.7
CO	5.8	8.6	10.2
HC	4.2	6.2	7.4
NO_x	16.7	24.8	29.4

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(1) The 1974 emissions are 1.144 times the 1975 emissions.

6. VESSELS

Emissions from commercial and miscellaneous vessels and terminal equipment are projected to increase at a rate of 4.9% per year in accordance with the mean 1965 to 1974 growth discussed in Chapter IV, Section 7. Emissions from recreational boats are projected to increase in accordance with population growth factors given in Table II-2. Baseline year data and projected emissions are summarized in Table VII-8.

TABLE VII-8

BASELINE YEAR DATA AND PROJECTED EMISSIONS FROM VESSELS

	1975	1980	1985
Population Factor	1.000	1.085	1.192
Shipping Factor	1.000	1.245	1.490
Emissions (tons/yr)			
TSP	9.0	11.2	13.4
SO_2	18.5	20.1	26.8
CO	1175.2	1284.6	1418.5
HC	415.4	451.7	497.0
NO_x	32.3	39.8	47.4

7. ROAD VEHICLES

Projected emissions from this source category depend upon the reduction in emission factors and the increase on traffic volume expected over the next decade. Average emission factors from AP-42 were used for CO, HC and NO_x. Baseline year light duty gasoline vehicle emission factors for TSP and SO_2 were reduced in proportion to the reduction in average emission factors. Baseline year emission factors remained constant for heavy duty vehicles. Baseline year and projected emission factors are summarized in Table VII-9.

TABLE VII-9

BASELINE YEAR AND PROJECTED ROAD VEHICLE EMISSION FACTORS (G/MI)

	1975			1980			1985		
	LDGV	HDGV	HDDV	LDGV	HDGV	HDDV	LDGV	HDGV	HDDV
TSP	0.51	1.29	2.13	0.41	1.29	2.13	0.35	1.29	2.13
SO_2	0.31	0.36	2.8	0.11	0.36	2.8	0.11	0.36	2.8
CO	61.1	61.1	61.1	31.1	31.1	31.1	15.7	15.7	15.7
HC	8.8	8.8	8.8	5.4	5.4	5.4	2.7	2.7	2.7
NO_x	4.8	4.8	4.8	3.6	3.6	3.6	2.4	2.4	2.4

VMT are projected to increase in accordance with permanent population increases in all areas except the Waccamaw census division. In Waccamaw VMT are projected to increase in accordance with the sum of permanent population plus one third the seasonal population. Baseline year data and projected emissions are summarized in Table VII-10.

TABLE VII-10

BASELINE YEAR DATA AND PROJECTED EMISSIONS

		1975	1980	1985
Population Factor		41627	47361	53949
Emissions (tons/yr)				
TSP	LDGV	139.5	127.6	124.1
	HDGV	7.0	8.0	9.1
	HDDV	6.5	7.4	8.4
TSP	TOTAL	153.0	143.0	141.6
SO_2	LDGV	35.6	34.3	39.0
	HDGV	2.0	2.3	2.6
	HDDV	8.5	9.7	11.1
SO_2	TOTAL	46.1	46.3	52.7
CO		17232.5	9979.6	5738.7
HC		2481.9	1732.8	986.9
NO_x		1353.8	1155.2	877.3

8. AIRCRAFT

Both airports in the study area provide services for general aviation operations only. The FAA document Terminal Area Forecast, 1976-1986 contains projections for general aviation growth for South Carolina and for individual airports in South Carolina with FAA control towers. There is minor difference in growth projections between the two FAA airports in the vicinity, Charleston and Myrtle Beach, and the state-wide values. Emissions from aircraft are projected to increase in accordance with state-wide projections of general aviation operations. Baseline year data and projected emissions are summarized in Table VII-11.

TABLE VII-11

BASELINE YEAR DATA AND PROJECTED EMISSIONS FROM AIRCRAFT

	1975	1980	1985
General Aviation Factor	1.00	1.36	2.05
Emissions (tons/year)			
TSP	0.2	0.3	0.4
SO_2	0.2	0.3	0.4
CO	77.2	105.0	158.3
HC	3.5	4.8	7.2
NO_x	0.8	1.1	1.6

9. ON-SITE INCINERATION

For the baseline year emission inventory emissions from two incinerators were extracted from the point source inventory and entered in the area source inventory in order to decrease computer costs for modeling. Emissions from these two incinerators, both located in Georgetown City, are projected to increase in accordance with the population growth factor for Georgetown given in Table II-2. It is not anticipated that any new on-site incinerator operating permits will be issued by the DHEC. Baseline year data and projected emissions are summarized in Table VII-12.

TABLE VII-12

BASELINE YEAR DATA AND PROJECTED EMISSIONS FROM ON-SITE INCINERATORS

	1975	1980	1985
Population Factor	1.00	1.013	1.066
Emissions (tons/year)			
TSP	2.0	2.0	2.1
SO_2	Neg.	Neg.	Neg.
CO	1.0	1.0	1.1
HC	Neg.	Neg.	Neg.
NO_x	Neg.	Neg.	Neg.

10. OPEN BURNING

Emissions from this source category are projected to increase in accordance with the growth in number of dwelling units given in Table VII-1. Baseline year data and projected emissions are summarized in Table VII-13.

TABLE VII-13

BASELINE YEAR DATA AND PROJECTED EMISSIONS FROM OPEN BURNING

	1975	1980	1985
Dwelling Units	11,216	12,513	14,156
Emissions (tons/year)			
TSP	8.0	8.9	10.1
SO_2	Neg.	Neg.	Neg.
CO	26.4	29.5	33.3
HC	6.4	7.1	8.1
NO_x	0.9	1.0	1.1

11. STRUCTURAL FIRES

Emissions from this source category are projected to increase in accordance with the population growth factors given in Table II-2. Baseline year data and projected emissions are summarized in Table VII-14.

TABLE VII-14

BASELINE YEAR DATA AND PROJECTED EMISSIONS FROM STRUCTURAL FIRES

	1975	1980	1985
Population Factor	1.000	1.085	1.192
Emissions (tons/year)			
TSP	0.1	0.1	0.1
SO_2	Neg.	Neg.	Neg.
CO	0.4	0.4	0.5
HC	Neg.	Neg.	Neg.
NO_x	Neg.	Neg.	Neg.

12. PAVED ROADS

In Chapter VI it was determined that the emission factor for paved roads was 50% too small and consequently baseline year emissions were doubled for the analysis. Projected emissions are expected to increase in accordance with the increase in VMT discussed in Section 7 of this chapter. Revised baseline year and projected emissions are as follows:

1975 - 1329.6 tons/yr
1980 - 1512.7 tons/yr
1985 - 1723.2 tons/yr

13. UNPAVED ROADS

In Chapter VI it was determined that emissions from this source category should be reduced by 50% to 10326.4 tons/yr. Projected emissions depend upon projected VMT on unpaved roads. It would be expected that VMT would increase as population increases. On the other hand routine surfacing of roads would decrease the number of unpaved road miles. Since there is no rationale for determining the relative weight of these two opposite effects, emissions are projected to remain constant over the decade.

14. CONSTRUCTION OPERATIONS

In Chapter IV, Section 19, the land requirements per 1000 population increase were determined for four classes of building construction. Emissions from the four classes are projected in accordance with the following criteria:

- Permanent Residential - Permanent population growth
- Seasonal Residential - Seasonal population growth
- Commercial/Institutional - Non-manufacturing employment growth
- Industrial - Manufacturing employment growth

Emissions from non-building construction are projected to increase in accordance with contract construction employment.

Baseline year data and projected emissions are summarized in Table VII-15. The results show that construction activity is expected to be 9% greater in 1980 than in 1975 and 22% greater in 1985. This indicates that county growth is non-linear and is expected to accelerate with time, a conclusion borne out by the available planning documents.

TABLE VII-15

BASELINE YEAR DATA AND PROJECTED EMISSIONS FROM CONSTRUCTION ACTIVITY

GROWTH PARAMETER	1975	1980	1985
Permanent Population Factor	1.00	1.085	1.192
Seasonal Population Factor	1.00	1.478	1.970
Non-Manufacturing Employment	5923	6514	7364
Manufacturing Employment	5041	5545	6095
Contract Construction Employment	467	501	552

TSP EMISSIONS (TONS/YR)	1975	1980	1985
Permanent Residential Construction	1.2	1.3	1.4
Seasonal Residential Construction	0.4	0.6	0.8
Commercial/Institutional Construction	9.8	10.8	12.2
Industrial Construction	6.1	6.7	7.4
Non-Building Construction	13.1	14.1	15.5
Total Emissions	30.6	33.5	37.3

15. SMALL POINT SOURCES

There are no new small point sources expected to be established in the county. Emissions from the three baseline year sources included in the area source inventory are projected to increase in accordance with the growth in manufacturing employment growth given in Table II-4. Baseline year data and projected emissions are summarized in Table VII-16.

TABLE VII-16

BASELINE YEAR DATA AND PROJECTED EMISSIONS FROM SMALL POINT SOURCES

	1975	1980	1985
Manufacturing Employment	5041	5545	6095
Emissions (tons/yr)			
TSP	4.0	4.4	4.8
SO_2	31.0	34.1	37.5
CO	Neg.	Neg.	Neg.
HC	Neg.	Neg.	Neg.
NO_x	8.0	8.8	9.7

16. PROJECTED EMISSIONS SUMMARY

County-wide projected emissions from all source categories are summarized in Tables VII-17 and VII-18. Table VII-19 summarizes baseline year and projected TSP emissions.

TABLE VII-17

1980 PROJECTED EMISSIONS SUMMARY

(TONS/YR)

	SOURCE CATEGORY	TSP	SO_2	CO	HC	NO_x
1.	Residential Fuel Usage	6.3	29.4	15.7	2.5	22.5
2.	C/I Fuel Usage	1.0	11.8	2.4	0.6	10.6
3.	Agricultural Equipment	6.3	4.3	317.5	16.6	54.5
4.	Small Gasoline Engines	2.7	1.3	938.3	101.6	13.2
5.	Construction Equipment	1.0	1.2	3.5	1.1	15.2
6.	Railroad Locomotives	1.6	4.8	8.6	6.2	24.8
7.	Vessels	11.2	20.1	1284.6	451.7	39.8
8.	Road Vehicles	143.0	46.3	9979.6	1732.8	1155.2
9.	Aircraft	0.3	0.3	105.0	4.8	1.1
10.	On-Site Incineration	2.0	----	1.0	----	----
11.	Open Burning	8.9	----	29.5	7.1	1.0
12.	Structural Fires	0.1	----	0.4	----	----
13.	Wild Forest Fires	96.1	----	788.6	135.6	22.6
14.	Prescribed Burning	832.9	----	6837.5	1175.9	196.0
15.	Agricultural Burning	10.5	----	58.5	11.5	2.0
16.	Paved Roads	1512.7	----	----	----	----
17.	Unpaved Roads	10326.4	----	----	----	----
18.	Agricultural Filling	82.2	----	----	----	----
19.	Construction Operations	33.5	----	----	----	----
20.	Small Point Sources	4.4	34.1	----	----	8.8
	Total	13083.1	153.6	20370.7	3648.0	1567.3

TABLE VII-18

1985 PROJECTED EMISSIONS SUMMARY

(TONS/YR)

	SOURCE CATEGORY	TSP	SO_2	CO	HC	NO_x
1.	Residential Fuel Usage	5.2	32.0	11.9	2.0	24.6
2.	C/I Fuel Usage	1.1	13.7	2.8	0.6	12.1
3.	Agricultural Equipment	6.3	4.3	317.5	16.6	54.5
4.	Small Gasoline Engines	3.0	1.4	1030.8	111.6	14.5
5.	Construction Equipment	1.1	1.3	3.9	1.2	16.8
6.	Railroad Locomotives	1.9	5.7	10.2	7.4	29.4
7.	Vessels	13.4	26.8	1418.5	497.0	47.4
8.	Road Vehicles	141.6	52.7	5738.7	986.9	877.3
9.	Aircraft	0.4	0.4	158.3	7.2	1.6
10.	On-Site Incineration	2.1	----	1.1	----	----
11.	Open Burning	10.1	----	33.3	8.1	1.1
12.	Structural Fires	0.1	----	0.5	----	----
13.	Wild Forest Fires	96.1	----	788.6	135.6	22.6
14.	Prescrubed Burning	832.9	----	6837.5	1175.9	196.0
15.	Agricultural Burning	10.5	----	58.5	11.5	2.0
16.	Paved Roads	1723.2	----	----	----	----
17.	Unpaved Roads	10326.4	----	----	----	----
18.	Agricultural Tilling	82.2	----	----	----	----
19.	Construction Operations	37.3	----	----	----	----
20.	Small Point Sources	4.8	37.5	----	----	9.7
	Total	13299.7	175.8	16412.1	2961.6	1309.6

TABLE VII-19

BASELINE YEAR AND PROJECTED TSP EMISSIONS

(TONS/YR)

	SOURCE CATEGORY	1975	1980	1985
1.	Residential Fuel Usage	7.3	6.3	5.2
2.	C/I Fuel Usage	0.9	1.0	1.1
3.	Agricultural Equipment	6.3	6.3	6.3
4.	Small Gasoline Engines	2.5	2.7	3.0
5.	Construction Equipment	0.9	1.0	1.1
6.	Railroad Locomotives	1.0	1.6	1.9
7.	Vessels	9.0	11.2	13.4
8.	Road Vehicles	153.0	143.0	141.6
9.	Aircraft	0.2	0.3	0.4
10.	On-Site Incineration	2.0	2.0	2.1
11.	Open Burning	8.0	8.9	10.1
12.	Structural Fires	0.1	0.1	0.1
13.	Wild Forest Fires	96.1	96.1	96.1
14.	Prescribed Burning	832.9	832.9	832.9
15.	Agricultural Burning	10.5	10.5	10.5
16.	Paved Roads (Revised)	1392.6	1512.7	1723.2
17.	Unpaved Roads (Revised)	10326.4	10326.4	10326.4
18.	Agricultural Tilling	82.2	82.2	82.2
19.	Construction Operations	30.6	33.5	37.3
20.	Small Point Sources	4.0	4.4	4.8
	Total	12966.5	13083.1	13299.7
	Increase over 1975		0.90%	2.57%

CHAPTER VIII

PROJECTED EMISSIONS DISTRIBUTION

The following paragraphs discuss the methodology for allocation or assignment of county-wide projected emissions to the appropriate sub-county grid area. For those source categories for which emissions were projected to remain constant allocation to sub-county areas was made in accordance with the baseline year distribution.

1. RESIDENTIAL FUEL USAGE

For each planning district shown in Table VII-1, the mean emission rates per dwelling unit were calculated similarly to the county-wide method discussed in Chapter VII, Section 1. These are summarized in Table VIII-1.

TABLE VIII-1

MEAN TSP EMISSIONS

(lbs/dwelling unit-year)

	1975	1980	1985
Georgetown Urban Fringe	1.26	0.96	0.70
Andrews Urban Fringe	1.16	0.91	0.67
Waccamaw Neck	0.58	0.53	0.38
Rural Area	2.30	1.65	1.09
Andrews and Georgetown Cities	0.90	0.84	0.74

With the mean emission rates and the number of dwelling units from Table VII-1, emissions for each planning district were calculated. These, in turn, were allocated to sub-county grid areas in accordance with population projections given in Table II-3.

2. COMMERCIAL/INSTITUTIONAL FUEL USAGE

Projected emissions from this source category were allocated in accordance with the distribution of population given in Table II-3.

3. SMALL GASOLINE ENGINES

Projected emissions from this source category were allocated to sub-county areas in accordance with the projected population distribution given in Table II-3.

4. CONSTRUCTION EQUIPMENT

No major highway or industrial construction projects are now planned for 1980 and 1985. All emissions from this source category were allocated to sub-county areas in accordance with population growth both seasonal and permanent. All seasonal growth was assigned to the Waccamaw census district as follows:

- 30% to grid 23.0
- 30% to grid 24.0
- 20% to grid 25.0
- 20% to grid 26.1

5. RAILROAD LOCOMOTIVES

Projected emissions from this source category were allocated to sub-county areas in accordance with projected train-miles traveled in each area.

6. VESSELS

Projected emissions from this source category were allocated to sub-county areas in accordance with the distribution of baseline year emissions.

7. ROAD VEHICLES

Emissions from this source category were allocated as follows.

1. Total emissions were first allocated in accordance with the distribution of VMT given in Table IV-6.

2. These sub-county emissions were then increased in accordance with the population growth procedures discussed in Chapter VII. In assigning seasonal population within the Waccumaw census district the following factors were used:

- 30% to grid 23.0
- 30% to grid 24.0
- 20% to grid 25.0
- 20% to grid 26.1

3. Finally, the increased sub-county emissions were normalized to the county-wide totals.

8. AIRCRAFT

Projected emissions from this source category were assigned to the sub-county areas in which the two airports are located, proportional to the baseline year emissions from each airport.

9. ON-SITE INCINERATION

It is anticipated that no new on-site incinerators will be permitted. Emissions from the two currently operating incinerators were assigned to the sub-county areas in which they are located.

10. OPEN BURNING

The growth in emissions in this source category, 0.9 tons/year from 1975 to 1980 and 1.2 tons/year from 1980 to 1985, was allocated in accordance with the growth in number of dwelling units given in Table VII-1 and then further distributed in accordance with population. This growth in emissions was added to the previous period sub-county area emissions.

11. STRUCTURAL FIRES

Projected emissions from this source category were allocated to sub-county areas in accordance with the projected population distribution given in Table II-3.

12. PAVED ROADS

As for the baseline year, emissions from this source category were allocated in accordance with the distribution of road vehicle particulate exhaust emissions.

13. UNPAVED ROADS

Projected emissions from this source category were allocated in proportion to the baseline year distribution of emissions.

14. CONSTRUCTION OPERATIONS

Emissions from this source category were allocated in accordance with the distribution of emissions from construction equipment.

15. SMALL POINT SOURCES

Since no new small point sources are expected to be established, projected emissions from this source category were assigned to the sub-county areas in which the baseline year emissions were located, proportional to such emissions.

16. PROJECTED EMISSIONS ALLOCATION SUMMARY

County-wide projected TSP emissions allocation is summarized in Tables VIII-2 and VIII-3.

TABLE VIII-2

1980 PROJECTED EMISSIONS ALLOCATION

Grid No.	Emissions (tons/day)	Grid No.		Emissions (tons/day)
1.1	0.910	15.0		0.078
1.2	0.966	16.0		0.012
2.1	0.554	17.0		0.044
2.2	1.208	18.0		0.107
3.0	0.371	19.0		0.023
4.0	1.690	20.0		0.007
5.0	2.440	21.0		0.059
6.0	0.073	22.0		0.113
7.0	0.042	23.0		0.311
8.1	1.120	24.0		1.745
8.2	0.675	25.0		1.908
9.1	0.986	26.1		0.682
9.2	0.898	26.2		0.204
10.1	0.910	27.1		2.061
10.2	2.888	27.2		1.156
11.1	2.018	28.0		1.463
11.2	4.555	29.1		0.555
12.0	1.669	29.2		0.528
13.0	0.098	29.3		0.665
14.0	0.051		Total	35.843

TABLE VIII-3

1985 PROJECTED EMISSIONS ALLOCATION

Grid No.	Emissions (tons/day)	Grid No.		Emissions (tons/day)
1.1	0.910	15.0		0.080
1.2	0.966	16.0		0.013
2.1	0.554	17.0		0.045
2.2	1.209	18.0		0.109
3.0	0.371	19.0		0.024
4.0	1.690	20.0		0.007
5.0	2.439	21.0		0.060
6.0	0.072	22.0		0.116
7.0	0.042	23.0		0.397
8.1	1.120	24.0		1.886
8.2	0.683	25.0		2.019
9.1	0.987	26.1		0.788
9.2	0.912	26.2		0.205
10.1	0.910	27.1		2.061
10.2	2.896	27.2		1.227
11.1	2.018	28.0		1.463
11.2	4.567	29.1		0.558
12.0	1.676	29.2		0.538
13.0	0.100	29.3		0.665
14.0	0.052		Total	36.435

CHAPTER IX

PROJECTED AIR QUALITY

Figures IX-1 and IX-2 show the TSP concentration fields for 1980 and 1985. Inputs to the model for the projection years included the area source emission inventories from Tables VIII-2 and VIII-3, the baseline year point source emission inventory, and the 5-year mean meteorological data for Myrtle Beach. Regression statistics included a slope of 1.0 with a background concentration of 20 $\mu g/m^3$.

The DHEC anticipates no growth in the point source emissions over the decade, the rather substantial projected growth in manufacturing employment summarized in Table II-4, notwithstanding. If such growth does materialize, it is assumed that it will be in the light industry category involving a limited increase in emissions. There is one exception to this growth pattern: the South Carolina Public Service Authority may add another unit at the Georgetown power plant increasing TSP emissions from 1.515 tons/day to 3.030 tons/day. As can be seen from the source contribution file in Appendix C, the doubling of emissions from the source would have little effect on air quality in the Georgetown city impacted area, increasing concentrations by less than 0.01 $\mu g/m^3$.

Table IX-1 summarizes the maximum baseline year and projected air quality calculated by the model. In each year the maximum was at the receptor at 695E, 3693N. Maximum values shown on the concentration field figures are slightly higher, about 500m north of that receptor.

TABLE IX-1

MAXIMUM CONCENTRATIONS ($\mu g/m^3$)

	1975	1980	1985
Annual Arithmetic Mean	90	89	90
Annual Geometric Mean	78	77	78
Second Highest 24-Hour Sample	323	319	323

Figure IX-1.

1980 CALCULATED CONCENTRATION FIELD ($\mu g/m^3$)

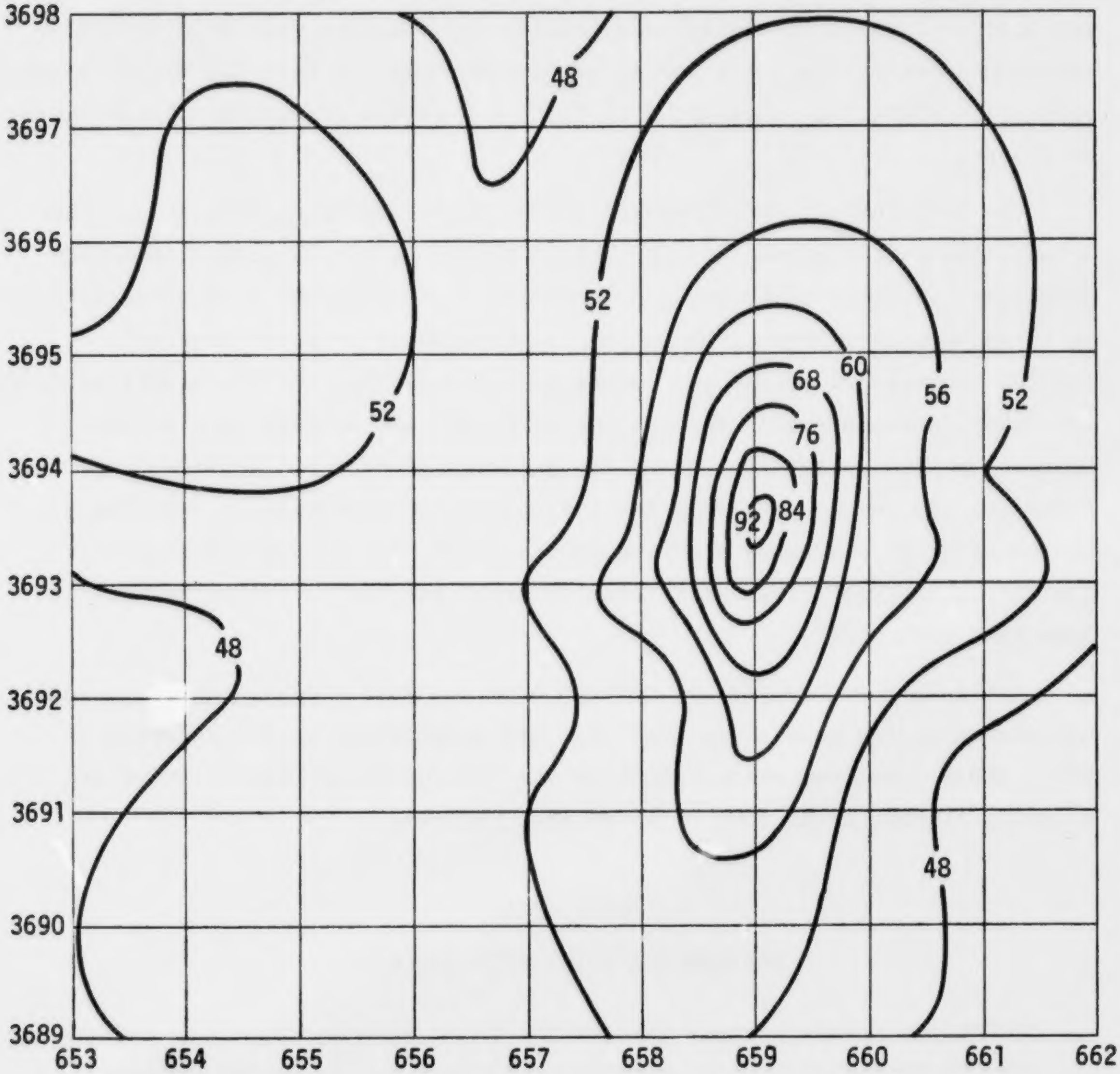
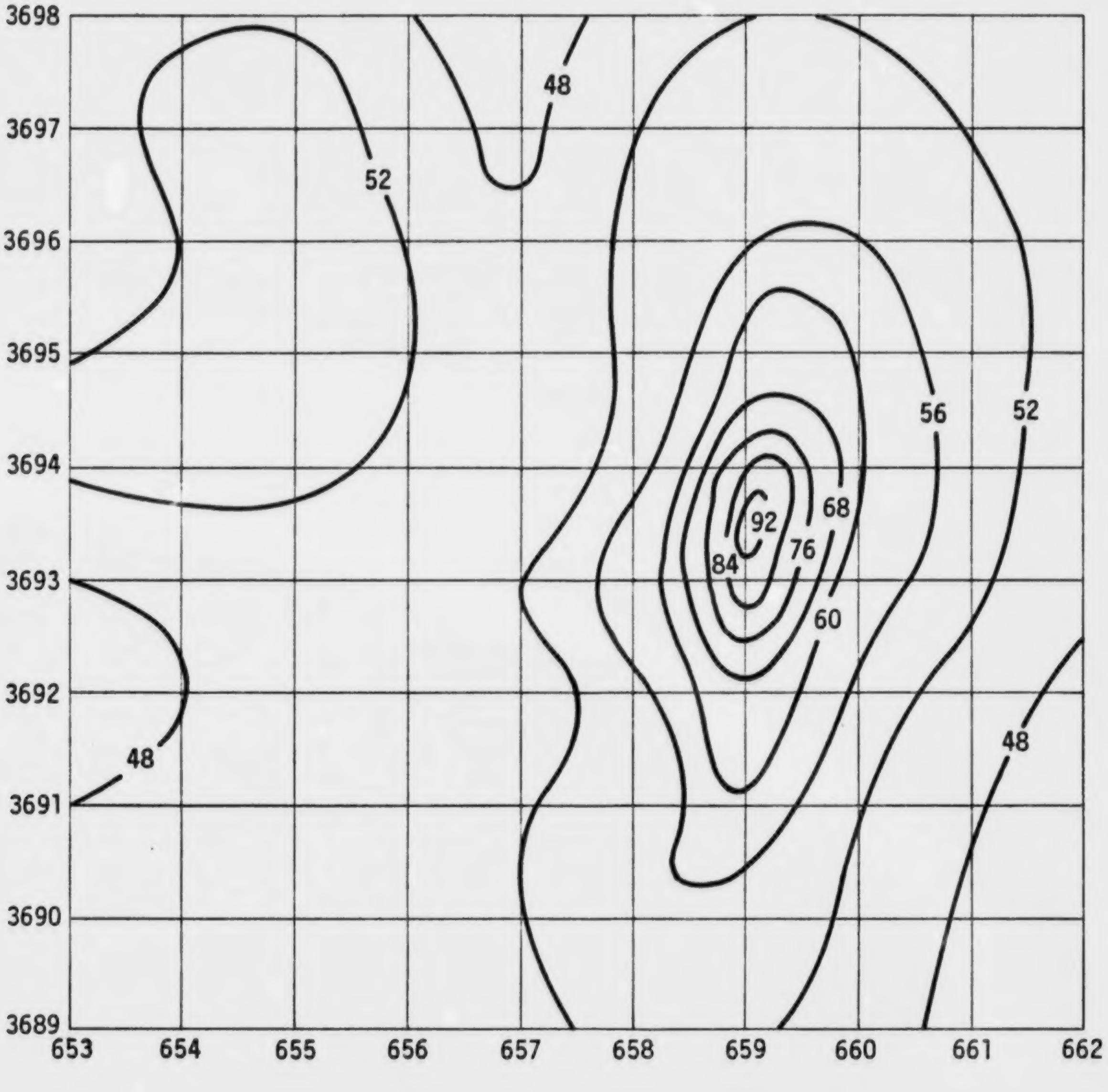


Figure IX-2.

1985 CALCULATED CONCENTRATION FIELD ($\mu g/m^3$)



CHAPTER X

CONCLUSIONS

1. All TSP ambient air quality standards are being violated in Georgetown County.

2. The impacted area is limited to a very small part of the County, of approximately 4 km^2, centered in downtown Georgetown City.

3. Without more stringent control of emissions, standards will continue to be violated at the same level throughout the decade.

4. Although the model did not calibrate, in the strict sense that is applied to large regional analyses, it did successfully predict the concentration in the impacted area and the extent of the impacted area.

5. Concentrations in the impacted area result about equally from paved and unpaved roads, from the Georgetown Steel complex, and from all other sources.

6. Small concentrations in the impacted area result from emissions from International Paper sources because of the high stacks and effluent temperatures.

7. The most probable errors in the emission inventory, if any, are as follows:

   - Unpaved road emissions are too great.
   - Point source impact from the steel complex is overestimated.
   - Fugitive emissions and upset emissions from the steel complex are not included.

8. Further analysis of the air quality data with respect to weather conditions and steel mill operating conditions might provide added insight into the source of emissions.

9. Consideration should be given to control of emissions from unpaved roads in the fringe area of Georgetown City.

10. Measures for increased control of emissions from the steel complex should be investigated.

APPENDIX A

ANALYSIS OF INDUSTRIAL PROCESS FUGITIVE EMISSIONS

APPENDIX A

ANALYSIS OF INDUSTRIAL PROCESS FUGITIVE EMISSIONS

Calibration efforts for Georgetown, South Carolina were unsuccessful. As discussed in the main body of the report, two primary reasons for the poor modeling results could be: (1) the meteorological data used for modeling was never considered completely appropriate for Georgetown and (2) the monitoring sites are quite close together geographically. Of course, another reason could be the incompleteness of the emission inventory. Comprehensive inspections were performed for each major industrial facility in Georgetown. In particular, sources of industrial process fugitive emissions were identified.

EMISSIONS

The inspection reports were reviewed to identify sources and emissions not modeled in the original effort. Reports were available for Georgetown Steel, Georgetown Ferreduction, American Cyanamid and International Paper. For International Paper, estimates were provided for fugitive emission sources. For the other plants, fugitive emission sources were identified, and process throughputs given. Emission factors from Technical Guidance for Control of Industrial Process Fugitive Emissions (EPA Publication No. 450/3-77-010) were used to estimate emissions from these sources. A summary of emissions by plant and by source is given in Table A-1.

INITIAL MODELING RESULTS

The industrial process fugitive particulate emissions (IPFPE) were modeled using AQDM. The contributions from IPFPE were manually added to contributions from previously modeled emissions. The same meteorological data as used before were used to model these fugitive sources. The lime kiln emissions at International Paper were modeled with an area source

TABLE A-1

INDUSTRIAL PROCESS FUGITIVE EMISSIONS IN GEORGETOWN, SOUTH CAROLINA

PLANT	SOURCE	EMISSIONS (TONS/YEAR)
Georgetown Steel	Handling and disposal of dust collected by baghouse[1]	72
	Slag handling and disposal[1]	9
	Skull breaking[1]	10
	Yard traffic[2]	-
	Total	91
Georgetown Ferreduction	Unloading raw materials[1]	60
	Non-enclosed conveyors[3]	-
	Total	60
American Cyanamid	Bauxite unloading and conveying[1]	3
	Bauxite crushing[1]	3
	Total	6
International Paper[4]	Landfilling fly ash	72
	Lime kiln operations	55
	Recovery boilers[3]	-
	Manual sootblowing of oil-fired boilers[3]	-
	Yard traffic	15
	Total	142

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[1] Estimated using throughputs from inspection reports and emission factors from Technical Guidance for Control of Industrial Process Fugitive Emissions (EPA-450/3-77-010).

[2] Not estimated because of lack of data.

[3] Included in point source inventory.

[4] Emission estimates from "Source Inspections in Selected Region IV Nonattainment Areas to Determine Capabilities of Reducing TSP Emissions", Volume VIII: International Paper Company, Georgetown, South Carolina.

release height of 100 ft. All of the other sources were modeled with a release height of 10 ft. An area of one (1.0) square kilometer was assigned to each fugitive source.

Table A-2 gives the concentration at each monitoring site which could be attributable to fugitive emission sources. As can be seen from this table, the range of contributions from fugitive emission sources is from 26 $\mu g/m^3$ to 13 $\mu g/m^3$. In order to relate these contributions to those from other types of sources, see Table A-3.

Two regression analyses were performed for the new modeling results. In the first analysis, the unadjusted area source contributions were used. The resulting linear regression equation was:

$$Y = 132.57 - 0.67X$$

For this equation, the correlation index (R^2) was 0.214. For the second analysis, the adjustments applied to the unpaved and paved road emissions were used. (See Chapter VI, Page VI-12 of the main body of the report.) When these adjusted values were used, the resulting regression equation was:

$$Y = 85.93 - 0.19X$$

The correlation index (R^2) was 0.016. Both of these equations represent some improvement over the original regression equation in that the Y-intercept was reduced and the slope was brought nearer to 1.00. Yet, the results are still unsatifactory because of the negative slope and the poor correlation.

SENSITIVITY ANALYSIS

The emissions estimates for industrial process fugitive emissions are far from exact. Most of the emission factors are rated D or E on a scale of A-E with E being the least accurate factors. In addition, known fugitive emission sources, such as yard traffic, are still missing from the inventory. Thus, there is considerable latitude for testing the sensitivity of the TSP concentrations to revisions in the industrial process fugitive emission

TABLE A-2

SOURCE CONTRIBUTIONS TO MONITORING SITES FROM FUGITIVE EMISSIONS[1]

MONITORING STATIONS	INDUSTRIAL PROCESS FUGITIVE EMISSION SOURCES					
	GEORGETOWN STEEL	GEORGETOWN FERREDUCTION	AMERICAN CYANAMID	INTERNATIONAL PAPER (GENERAL)	INTERNATIONAL PAPER (LIME KILNS)	TOTAL
County Health Department	5.3	3.0	0.3	2.8	1.4	12.9
Howard High School	7.5	1.8	0.4	4.6	1.4	15.8
Continuous Monitoring Station	5.3	3.5	0.8	14.7	1.6	25.9
Dr. Beck	8.4	9.3	0.5	3.9	1.7	23.8
State Ports Authority	5.2	3.7	0.4	7.7	1.7	18.8

[1] All values are annual arithmetic averages.

TABLE A-3

SOURCE CONTRIBUTION TO MONITORING STATIONS FROM SELECTED SOURCE TYPES[1]

(MICROGRAMS PER CUBIC METER)

		TYPES OF SOURCES				
				AREA SOURCES[2]		
MONITORING STATION	OBSERVED CONCENTRATION	POINT SOURCES	FUGITIVE SOURCES	UNPAVED ROADS	PAVED ROADS	TOTAL
County Health Department	78	27	13	37	6	48
Howard High School	78	14	16	42	4	50
Continuous Monitoring Station	85	14	26	44	4	52
Dr. Beck	62	22	24	48	5	58
State Ports Authority	55	20	19	45	4	52

[1] All concentrations are annual arithmetic averages.

[2] The emissions for unpaved and paved roads are unchanged from the original estimates.

estimates. Similar analyses have proven useful in the past for adjusting emission estimates for unpaved and paved roads. Usually, such adjustments can significantly improve calibration efforts. Yet, in this case, such analysis techniques would not be very useful because the source contribution to the two monitoring sites with low TSP values are higher than the source contributions to other sites with higher observed TSP concentrations. Were the fugitive emissions to be increased, the impact would be greatest upon those sites for which it should be lowest. Nor can a distinct analysis be performed for individual sources.

CONCLUSIONS AND RECOMMENDATIONS

The following conclusions can be drawn from this analysis of industrial process fugitive emissions in Georgetown, South Carolina:

1. The results of all calibration efforts continue to be unsatisfactory.
2. Industrial process fugitive emissions can contribute significantly to TSP levels in downtown Georgetown.
3. There are two main reasons for the unsatisfactory calibration efforts. The meteorological data which was collected at the Myrtle Beach airport are inappropriate for air quality modeling in Georgetown. Although the use of proper meteorological data might improve modeling results, the close proximity of the monitoring sites to each other and to the sources might still preclude successful calibration.

Based upon these conclusions, it is recommended that DHEC continue to investigate methods for controlling industrial process fugitive emissions in Georgetown. Further modeling, with appropriate meteorological data, could also prove useful to DHEC. Nothing in this analysis contradicts the earlier conclusions and recommendations.

APPENDIX B

AQDM CALIBRATION PRINTOUT

The attached computer printout includes all point and area sources with unrevised emissions for paved and unpaved roads. In this and the following appendices, sources 1 - 39 are area sources, the source ID corresponding to the grid system shown in Figures III-1 and III-2 and later given in Table III-1. Sources 40 - 61 are point sources as follows:

40 - M & T Chemicals	Andrews	Baghouse
41 - International Paper	Georgetown	Recovery boiler
42 - International Paper	Georgetown	Recovery boiler
43 - International Paper	Georgetown	Dissolving tank
44 - International Paper	Georgetown	Dissolving tank
45 - International Paper	Georgetown	Lime kiln
46 - International Paper	Georgetown	Lime kiln
47 - International Paper	Georgetown	Power boiler
48 - International Paper	Georgetown	Power boiler
49 - International Paper	Georgetown	Power boiler
50 - Georgetown Ferreduction	Georgetown	Conveyor
51 - Georgetown Ferreduction	Georgetown	Metalizing
52 - Georgetown Ferreduction	Georgetown	Wiper bar blast collection
53 - Georgetown Ferreduction	Georgetown	Boiler
54 - Georgetown Steel	Georgetown	Baghouse
55 - Georgetown Steel	Georgetown	Roof monitor
56 - Georgetown Steel	Georgetown	Reheat furnace
57 - Georgetown Steel	Georgetown	Ladle heating
58 - Georgetown Steel	Georgetown	Lime handling conveyor
59 - S. C. Public Service	Georgetown	Boiler
60 - Sampit Lumber	Georgetown	Wood and bark boiler
61 - American Cyanamide	Georgetown	Aluminum manufacturing

GEORGETOWN SOUTH CAROLINA POINT/AREA SOURCES

Reproduced from best available copy.

SOURCE DATA

SOURCE NUMBER	SOURCE ID.	SOURCE LOCATION (KILOMETERS) HORIZONTAL	SOURCE LOCATION (KILOMETERS) VERTICAL	SOURCE AREA SQUARE KILOMETERS	ANNUAL SOURCE EMISSION RATE (TONS/DAY) SO2	ANNUAL SOURCE EMISSION RATE (TONS/DAY) PART	STACK DATA HT (FT)	STACK DATA DIAM (FT)	STACK DATA VEL (FPS)	STACK DATA TEMP (DEG.F)
1	11	667.3	3713.4	166.30	0.0	1.328	10.0	0.0	0.0	0.
2	12	655.9	3703.9	91.90	0.0	1.755	10.0	0.0	0.0	0.
3	21	663.9	3720.1	102.30	0.0	0.693	10.0	0.0	0.0	0.
4	22	655.0	3713.5	119.50	0.0	2.056	10.0	0.0	0.0	0.
5	30	659.7	3727.4	39.10	0.0	0.587	10.0	0.0	0.0	0.
6	40	655.2	3733.1	85.90	0.0	3.154	10.0	0.0	0.0	0.
7	50	650.4	3722.5	107.30	0.0	4.614	10.0	0.0	0.0	0.
8	60	634.1	3701.5	2.50	0.0	0.045	10.0	0.0	0.0	0.
9	70	632.7	3702.0	2.60	0.0	0.026	10.0	0.0	0.0	0.
10	81	642.1	3708.4	89.10	0.0	1.873	10.0	0.0	0.0	0.
11	82	636.6	3703.0	24.50	0.0	1.212	10.0	0.0	0.0	0.
12	91	644.3	3696.5	57.20	0.0	1.447	10.0	0.0	0.0	0.
13	92	635.5	3699.5	46.60	0.0	1.493	10.0	0.0	0.0	0.
14	101	655.1	3705.2	65.30	0.0	1.607	10.0	0.0	0.0	0.
15	102	660.3	3701.5	27.40	0.0	5.575	10.0	0.0	0.0	0.
16	111	647.8	3704.0	106.50	0.0	3.764	10.0	0.0	0.0	0.
17	112	653.6	3695.9	27.50	0.0	9.910	10.0	0.0	0.0	0.
18	120	650.2	3696.9	29.10	0.0	3.153	10.0	0.0	0.0	0.
19	130	657.4	3694.7	1.50	0.0	0.059	10.0	0.0	0.0	0.
20	140	658.9	3694.0	0.50	0.0	0.033	10.0	0.0	0.0	0.
21	150	657.6	3695.0	1.20	0.0	0.048	10.0	0.0	0.0	0.
22	160	656.9	3693.9	2.50	0.0	0.008	10.0	0.0	0.0	0.
23	170	659.4	3693.3	0.80	0.0	0.027	10.0	0.0	0.0	0.
24	180	653.3	3693.3	0.22	0.0	0.055	10.0	0.0	0.0	0.
25	190	660.3	3692.7	0.90	0.0	0.014	10.0	0.0	0.0	0.
26	200	660.9	3693.2	0.20	0.0	0.004	10.0	0.0	0.0	0.
27	210	659.3	3691.5	3.10	0.0	0.036	10.0	0.0	0.0	0.
28	220	659.1	3693.2	3.60	0.0	0.059	10.0	0.0	0.0	0.
29	230	680.2	3710.4	25.50	0.0	0.123	10.0	0.0	0.0	0.
30	240	677.0	3710.4	52.30	0.0	2.678	10.0	0.0	0.0	0.
31	250	669.1	3699.7	32.90	0.0	3.162	10.0	0.0	0.0	0.
32	261	670.2	3695.5	51.40	0.0	0.688	10.0	0.0	0.0	0.
33	262	655.2	3693.1	58.10	0.0	0.210	10.0	0.0	0.0	0.
34	271	649.8	3687.2	118.20	0.0	3.746	10.0	0.0	0.0	0.
35	272	655.3	3693.2	34.30	0.0	2.030	10.0	0.0	0.0	0.
36	290	635.2	3692.0	113.90	0.0	2.542	10.0	0.0	0.0	0.
37	291	655.5	3680.0	224.10	0.0	0.871	10.0	0.0	0.0	0.
38	292	657.3	3694.4	11.20	0.0	1.004	10.0	0.0	0.0	0.
39	293	638.3	3683.0	168.00	0.0	1.009	10.0	0.0	0.0	0.
40	1140 1 1 2	630.0	3700.1	0.0	0.0	0.033	42.0	1.0	33.0	200.
41	1140 2 1	659.5	3692.5	0.0	2.055	0.444	250.0	11.3	50.0	190.
42	1140 2 2	659.5	3692.5	0.0	2.055	0.201	250.0	11.3	50.0	190.
43	1140 2 3	658.5	3692.6	0.0	0.0	0.274	250.0	4.5	21.0	155.
44	1140 2 4	659.5	3692.5	0.0	0.0	0.356	250.0	4.5	21.0	165.
45	1140 2 5	659.5	3692.6	0.0	0.0	0.196	100.0	5.0	25.0	165.
46	1140 2 5 7	659.5	3692.5	0.0	0.0	0.586	100.0	6.1	42.2	190.
47	1140 2 3	654.5	3692.6	0.0	3.838	0.293	70.0	6.5	40.0	600.
48	1140 2 714	658.5	3692.6	0.0	12.442	5.152	250.0	15.0	40.0	500.
49	1140 21517	659.5	3692.6	0.0	7.677	0.586	70.0	9.0	50.0	600.
50	1140 2 1	659.1	3693.3	0.0	0.0	0.059	40.0	2.3	11.9	90.
51	1140 2 2	659.1	3693.3	0.0	0.0	0.055	23.0	2.0	36.0	90.
52	1140 2 3	659.1	3693.3	0.0	0.0	0.058	23.0	2.5	35.0	90.
53	1140 2 4	659.1	3693.3	0.0	0.002	0.052	183.0	9.7	44.0	901.

```
I...54 ....1140   4 1.3.. I ...658.9...I...3693.4...I.......0.0....I....0.0..........0.025....I..80.0..5.6.....2.0.....215..I
I   55     1140   4.4     I    658.9   I   3693.4   I       0.0    I    0.0           0.364    I 120.0 41.3     8.0      90.  I
I   56     1140   4.5     I    658.9   I   3693.4   I       0.0    I    0.159         0.019    I  30.0  5.0    60.0     500.  I
I...57.....1140   4.7 ....I....658.9...I...3693.4...I.......0.0....I....0.203.......0.032....I..40.0..0.0.....0.0.....600..I
I   58     1140   4.9     I    658.9   I   3693.4   I       0.0    I    0.0           0.110    I  40.0  0.0     0.0      80.  I
I   59     1140   5.1     I    653.5   I   3593.4   I       0.0    I   36.932         1.515    I 400.0 20.0    42.2     300.  I
I...60 ....1140   8.1 ....I....644.1...I...3629.1...I.......0.0....I....0.014.......0.047....I..50.0..3.0....50.0.....400..I
I...51.....1140   9.2 ....I....659.3...I...3593.0...I.......0.0....I....0.0..........0.184....I..49.0..4.0.....9.2.....200..I
```

GEORGETOWN SOUTH CAROLINA   POINT/AREA SOURCES

RECEPTOR DATA

LOCATIONS TO BE USED AS RECEPTORS IN ADDITION TO THE 100 RECTANGULAR GRID LOCATIONS

RECEPTOR NUMBER	X-COORDINATE (KILOMETERS)	Y-COORDINATE (KILOMETERS)
101	685.0	3720.0
102	633.0	3703.0
103	655.0	3730.0
104	670.0	3590.0
105	644.0	3693.0
106	660.0	3710.0
107	690.0	3710.0

```
              GEORGETOWN SOUTH CAROLINA     POINT/AREA SOURCES

        METEOROLOGICAL INPUT DATA FOR  ANNUAL

MIXING DEPTH = 1300. METERS
AMBIENT TEMPERATURE =   65. DEGREES,FAHRENHEIT
AMBIENT PRESSURE = 1013. MILLIBARS

STABILITY CLASS  1
                                   WINDSPEED CLASS

 WIND DIRECTION       1         2        3         4         5         6

      N            .00046    .00041    .0        .0        .0        .0
      NNE          .00012    .00025    .0        .0        .0        .0
      NE           .00003    .00005    .0        .0        .0        .0
      ENE          .00010    .00014    .0        .0        .0        .0
      E            .00033    .00078    .0        .0        .0        .0
      ESE          .00031    .00064    .0        .0        .0        .0
      SE           .00026    .00043    .0        .0        .0        .0
      SSE          .00029    .00101    .0        .0        .0        .0
      S            .00036    .00059    .0        .0        .0        .0
      SSW          .00014    .00018    .0        .0        .0        .0
      SW           .00030    .00023    .0        .0        .0        .0
      WSW          .00053    .00034    .0        .0        .0        .0
      W            .00080    .00055    .0        .0        .0        .0
      WNW          .00031    .00039    .0        .0        .0        .0
      NW           .00023    .00027    .0        .0        .0        .0
      NNW          .00034    .00030    .0        .0        .0        .0
```

```
                    GEORGETOWN SOUTH CAROLINA     POINT/AREA SOURCES

                 METEOROLOGICAL INPUT DATA FOR  ANNUAL

STABILITY CLASS  2
                                        WINDSPEED CLASS
  WIND DIRECTION      1        2        3        4        5        6
       N           .00507   .00254   .00101   .0       .0       .0
       NNE         .00239   .00178   .00103   .0       .0       .0
       NE          .00202   .00156   .00062   .0       .0       .0
       ENE         .00131   .00114   .00075   .0       .0       .0
       E           .00271   .00382   .00233   .0       .0       .0
       ESE         .00239   .00435   .00261   .0       .0       .0
       SE          .00191   .00386   .00224   .0       .0       .0
       SSE         .00222   .00449   .00325   .0       .0       .0
       S           .00245   .00437   .00524   .0       .0       .0
       SSW         .00140   .00128   .00062   .0       .0       .0
       SW          .00130   .00103   .00046   .0       .0       .0
       WSW         .00217   .00178   .00119   .0       .0       .0
       W           .00393   .00380   .00191   .0       .0       .0
       WNW         .00195   .00213   .00189   .0       .0       .0
       NW          .00110   .00135   .00062   .0       .0       .0
       NNW         .00271   .00112   .00062   .0       .0       .0
```

```
                GEORGETOWN SOUTH CAROLINA     POINT/AREA SOURCES

          METEOROLOGICAL INPUT DATA FOR  ANNUAL

STABILITY CLASS  3
                                     WINDSPEED CLASS

 WIND DIRECTION      1        2        3        4        5        6

      N            .00237   .00407   .00627   .00046   .0       .0

      NNE          .00132   .00233   .00342   .00034   .0       .0

      NE           .00100   .00259   .00259   .00005   .0       .0

      ENE          .00076   .00213   .00272   .00018   .0       .0

      E            .00119   .00352   .00958   .00090   .0       .0

      ESE          .00113   .00361   .00549   .00023   .0       .0

      SE           .00102   .00306   .00364   .00023   .0       .0

      SSE          .00103   .00400   .00533   .00039   .0       .0

      S            .00168   .00492   .01578   .00329   .00007   .0

      SSW          .00090   .00201   .00501   .00071   .00002   .0

      SW           .00092   .00158   .00174   .00007   .0       .0

      WSW          .00067   .00215   .00242   .00018   .0       .0

      W            .00129   .00412   .00478   .00039   .0       .0

      WNW          .00055   .00256   .00341   .00019   .00002   .0

      NW           .00075   .00199   .00226   .00016   .0       .0

      NNW          .00112   .00192   .00254   .00043   .0       .0
```

GEORGETOWN SOUTH CAROLINA   POINT/AREA SOURCES

METEOROLOGICAL INPUT DATA FOR ANNUAL

STABILITY CLASS 4

WIND DIRECTION	WINDSPEED CLASS 1	2	3	4	5	6
N	.00165	.00521	.00743	.00572	.00053	.0
NNE	.00107	.00419	.00542	.00247	.00015	.0
NE	.00075	.00373	.00359	.00103	.00007	.0
ENE	.00094	.00230	.00351	.00095	.00005	.00002
E	.00109	.00464	.00583	.00210	.0	.0
ESE	.00067	.00298	.00226	.00052	.00002	.0
SE	.00046	.00199	.00158	.00057	.00002	.0
SSE	.00069	.00322	.00210	.00059	.00002	.0
S	.00055	.00493	.00391	.00702	.00025	.0
SSW	.00039	.00261	.00508	.00487	.00021	.00002
SW	.00037	.00213	.00153	.00092	.0	.0
WSW	.00063	.00204	.00179	.00107	.0	.0
W	.00078	.00274	.00293	.00290	.00023	.0
WNW	.00040	.00185	.00222	.00295	.00020	.00002
NW	.00044	.00105	.00222	.00197	.00039	.0
NNW	.00047	.00181	.00233	.00293	.00046	.00007

GEORGETOWN SOUTH CAROLINA   POINT/AREA SOURCES

METEOROLOGICAL INPUT DATA FOR ANNUAL

STABILITY CLASS 5

WIND DIRECTION	WINDSPEED CLASS 1	2	3	4	5	6
N	.05828	.02109	.00910	.00249	.00016	.00007
NNE	.02534	.01603	.00883	.00117	.00002	.0
NE	.01487	.01155	.00585	.00105	.0	.0
ENE	.00844	.00512	.00399	.00062	.00005	.0
E	.01483	.01082	.00732	.00097	.00002	.0
ESE	.00944	.00556	.00224	.00018	.0	.0
SE	.00901	.00347	.00160	.00027	.0	.0
SSE	.01039	.00517	.00135	.00037	.00002	.0
S	.02136	.01297	.00731	.00144	.00007	.0
SSW	.02715	.01693	.00949	.00162	.00014	.0
SW	.02829	.01255	.00416	.00023	.00002	.0
WSW	.02040	.00909	.00242	.00014	.00002	.0
W	.02554	.01251	.00529	.00080	.00015	.0
WNW	.01196	.00617	.00398	.00087	.00011	.00002
NW	.00824	.00438	.00394	.00128	.00014	.0
NNW	.02321	.00702	.00373	.00185	.00015	.00002

```
    GEORGETOWN SOUTH CAROLINA      POINT/AREA SOURCES


 REGRESSION PARAMETERS FOR CALCULATED (X-AXIS) VS. OBSERVED (Y-AXIS) CONCENTRATIONS

    POLLUTANT           Y-INTERCEPT           SLOPE        REGRESSION COEFFICIENTS
    ---------     (MICROGRAMS/CU. METER)    --------     COMPUTED     5% CONF. LEVEL

    PARTICULATES           151.7            -1.1228      -0.568        0.878  POOR CORRELATIONCOEFFICIENTS NOTUSED
```

GEORGETOWN SOUTH CAROLINA   POINT/AREA SOURCES

CORRELATION DATA

PARTICULATE MONITORING STATION	RECEPTOR LOCATION (KILOMETERS)		PARTICULATE CONCENTRATION (MICROGRAMS/CU. METER)	
	HORIZONTAL	VERTICAL	OBSERVED	CALCULATED
1	659.1	3694.0	78.	75.
2	658.4	3693.2	79.	64.
3	658.6	3692.8	85.	55.
4	659.4	3693.3	52.	80.
5	659.0	3692.4	55.	72.

GEORGETOWN SOUTH CAROLINA   POINT/AREA SOURCES

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	RECEPTOR LOCATION (KILOMETERS) VERT	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) PARTICULATES
1	653.0	3689.0	0.	50.
2	653.0	3690.0	0.	50.
3	653.0	3691.0	0.	42.
4	653.0	3692.0	0.	46.
5	653.0	3693.0	0.	49.
6	653.0	3694.0	0.	57.
7	653.0	3695.0	0.	57.
8	653.0	3696.0	0.	55.
9	653.0	3697.0	0.	55.
10	653.0	3698.0	0.	53.
11	654.0	3689.0	0.	51.
12	654.0	3690.0	0.	51.
13	654.0	3691.0	0.	50.
14	654.0	3692.0	0.	49.
15	654.0	3693.0	0.	51.
16	654.0	3694.0	0.	58.
17	654.0	3695.0	0.	59.
18	654.0	3696.0	0.	56.
19	654.0	3697.0	0.	58.
20	654.0	3698.0	0.	55.
21	655.0	3689.0	0.	50.
22	655.0	3690.0	0.	51.
23	655.0	3691.0	0.	50.
24	655.0	3692.0	0.	51.
25	655.0	3693.0	0.	50.
26	655.0	3694.0	0.	58.
27	655.0	3695.0	0.	57.
28	655.0	3696.0	0.	58.
29	655.0	3697.0	0.	58.
30	655.0	3698.0	0.	56.
31	656.0	3689.0	0.	50.
32	656.0	3690.0	0.	51.
33	656.0	3691.0	0.	52.
34	656.0	3692.0	0.	51.
35	656.0	3693.0	0.	48.
36	656.0	3694.0	0.	50.
37	656.0	3695.0	0.	56.
38	656.0	3696.0	0.	50.
39	656.0	3697.0	0.	55.
40	656.0	3698.0	0.	50.

GEORGETOWN SOUTH CAROLINA   POINT/AREA SOURCES

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	VERT	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	PARTICULATES
41	657.0	3689.0	0.	51.
42	657.0	3690.0	0.	52.
43	657.0	3691.0	0.	53.
44	657.0	3692.0	0.	51.
45	657.0	3693.0	0.	52.
46	657.0	3694.0	0.	48.
47	657.0	3695.0	0.	45.
48	657.0	3696.0	0.	49.
49	657.0	3697.0	0.	47.
50	657.0	3698.0	0.	47.
51	658.0	3689.0	0.	52.
52	658.0	3690.0	0.	53.
53	658.0	3691.0	0.	53.
54	658.0	3692.0	0.	54.
55	658.0	3693.0	0.	54.
56	658.0	3694.0	0.	53.
57	658.0	3695.0	0.	52.
58	658.0	3696.0	0.	54.
59	658.0	3697.0	0.	54.
60	658.0	3698.0	0.	52.
61	659.0	3689.0	0.	50.
62	659.0	3690.0	0.	52.
63	659.0	3691.0	0.	50.
64	659.0	3692.0	0.	54.
65	659.0	3693.0	0.	72.
66	659.0	3694.0	0.	74.
67	659.0	3695.0	0.	62.
68	659.0	3696.0	0.	57.
69	659.0	3697.0	0.	55.
70	659.0	3698.0	0.	54.
71	660.0	3689.0	0.	47.
72	660.0	3690.0	0.	49.
73	660.0	3691.0	0.	49.
74	660.0	3692.0	0.	51.
75	660.0	3693.0	0.	56.
76	660.0	3694.0	0.	57.
77	660.0	3695.0	0.	60.
78	660.0	3696.0	0.	57.
79	660.0	3697.0	0.	55.
80	660.0	3698.0	0.	54.

```
GEORGETOWN SOUTH CAROLINA     POINT/AREA SOURCES

 ------------------------------------------------------------------------
|                                                                        |
|                   RECEPTOR CONCENTRATION DATA                          |
|                                                                        |
| RECEPTOR |   RECEPTOR LOCATION   |      EXPECTED ARITHMETIC MEAN       |
|  NUMBER  |                       |-------------------------------------|
|          |     (KILOMETERS)      |      (MICROGRAMS/CU. METER)         |
|          |   HORIZ       VERT    |        SO2          PARTICULATES    |
|          |            |          |                 |                   |
|    81    |   661.0    |  3689.0  |        0.       |        44.        |
|    82    |   661.0    |  3690.0  |        0.       |        44.        |
|    83    |   661.0    |  3691.0  |        0.       |        45.        |
|    84    |   661.0    |  3692.0  |        0.       |        47.        |
|    85    |   661.0    |  3693.0  |        0.       |        51.        |
|    86    |   661.0    |  3694.0  |        0.       |        51.        |
|    87    |   661.0    |  3695.0  |        0.       |        54.        |
|    88    |   661.0    |  3696.0  |        0.       |        55.        |
|    89    |   661.0    |  3697.0  |        0.       |        52.        |
|    90    |   661.0    |  3698.0  |        0.       |        53.        |
|    91    |   662.0    |  3689.0  |        0.       |        41.        |
|    92    |   662.0    |  3690.0  |        0.       |        42.        |
|    93    |   662.0    |  3691.0  |        0.       |        43.        |
|    94    |   662.0    |  3692.0  |        0.       |        45.        |
|    95    |   662.0    |  3693.0  |        0.       |        45.        |
|    96    |   662.0    |  3694.0  |        0.       |        45.        |
|    97    |   662.0    |  3695.0  |        0.       |        50.        |
|    98    |   662.0    |  3696.0  |        0.       |        51.        |
|    99    |   662.0    |  3697.0  |        0.       |        51.        |
|   100    |   662.0    |  3698.0  |        0.       |        42.        |
|   101    |   685.0    |  3720.0  |        0.       |        21.        |
|   102    |   633.0    |  3703.0  |        0.       |        13.        |
|   103    |   655.0    |  3730.0  |        0.       |        24.        |
|   104    |   670.0    |  3690.0  |        0.       |        30.        |
|   105    |   644.0    |  3693.0  |        0.       |        30.        |
|   106    |   660.0    |  3710.0  |        0.       |        32.        |
|   107    |   680.0    |  3710.0  |        0.       |        27.        |
```

GEORGETOWN SOUTH CAROLINA   POINT/AREA SOURCES

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL   PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 65	RECEPTOR 55	RECEPTOR 54	RECEPTOR 57	RECEPTOR 77
1	0.77 % 0.7154	0.96 % 0.7157	1.11 % 0.7091	1.15 % 0.7142	1.25 % 0.7453
2	1.32 % 1.2189	1.65 % 1.2243	1.99 % 1.2023	1.99 % 1.2275	2.21 % 1.3159
3	0.49 % 0.4407	0.61 % 0.4524	0.67 % 0.4225	0.73 % 0.4511	0.78 % 0.4529
4	1.45 % 1.3367	1.81 % 1.3455	2.09 % 1.3307	2.18 % 1.3533	2.19 % 1.3014
5	0.43 % 0.3939	0.54 % 0.4029	0.60 % 0.3835	0.67 % 0.4133	0.70 % 0.4187
6	1.67 % 1.5475	2.12 % 1.5765	2.39 % 1.5195	2.59 % 1.6055	2.59 % 1.5399
7	2.43 % 2.2549	3.08 % 2.2896	3.44 % 2.1939	3.76 % 2.3355	3.76 % 2.2422
8	0.01 % 0.0128	0.02 % 0.0139	0.02 % 0.0118	0.02 % 0.0150	0.02 % 0.0147
9	0.01 % 0.0070	0.01 % 0.0076	0.01 % 0.0054	0.01 % 0.0091	0.01 % 0.0099
10	0.53 % 0.4923	0.69 % 0.5129	0.75 % 0.4910	0.86 % 0.5328	0.88 % 0.5235
11	0.40 % 0.3670	0.54 % 0.3985	0.51 % 0.3292	0.66 % 0.4109	0.67 % 0.3257
12	0.86 % 0.7985	1.12 % 0.8305	1.17 % 0.7442	1.40 % 0.8710	1.44 % 0.8575
13	0.56 % 0.5172	0.74 % 0.5524	0.79 % 0.4757	0.94 % 0.5950	0.95 % 0.5550
14	1.46 % 1.3467	1.84 % 1.3664	2.07 % 1.3249	2.23 % 1.3971	2.14 % 1.2749
15	9.07 % 8.3890	11.55 % 8.5926	12.92 % 8.1211	14.39 % 8.9305	15.65 % 9.3339
16	1.78 % 1.6450	2.20 % 1.6404	2.55 % 1.6255	2.62 % 1.6304	2.50 % 1.4981
17	9.39 % 8.6793	10.92 % 8.1225	13.20 % 8.4313	15.12 % 9.3940	14.73 % 8.7910
18	5.19 % 4.7986	6.99 % 5.1998	7.93 % 5.0662	13.46 % 8.3594	14.59 % 8.7007
19	0.54 % 0.4956	1.15 % 0.8555	0.60 % 0.3820	3.11 % 1.9223	2.24 % 1.3337
20	1.05 % 0.9707	5.34 % 3.9756	0.57 % 0.3671	1.11 % 0.5879	0.79 % 0.4525
21	0.19 % 0.1782	0.40 % 0.3011	0.29 % 0.1940	0.62 % 0.3890	0.32 % 0.1885

GEORGETOWN SOUTH CAROLINA   POINT/AREA SOURCES

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL   PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 65	RECEPTOR 55	RECEPTOR 56	RECEPTOR 57	RECEPTOR 77
22	0.03 %	0.04 %	0.03 %	0.05 %	0.04 %
	0.0244	0.0305	0.0205	0.0322	0.0253
23	0.45 %	0.79 %	0.60 %	0.31 %	0.26 %
	0.4120	0.5795	0.3914	0.1325	0.1549
24	3.54 %	1.36 %	1.81 %	0.66 %	0.79 %
	3.2590	1.0125	1.1592	0.4130	0.4724
25	0.11 %	0.07 %	0.19 %	0.06 %	0.11 %
	0.1054	0.0507	0.1197	0.0392	0.0574
26	0.02 %	0.02 %	0.02 %	0.02 %	0.03 %
	0.0212	0.0169	0.0125	0.0025	0.0179
27	0.15 %	0.15 %	1.09 %	0.15 %	0.19 %
	0.1408	0.1126	0.5933	0.0231	0.1192
28	0.21 %	0.23 %	0.37 %	0.23 %	0.26 %
	0.1757	0.1720	0.2339	0.1415	0.1539
29	0.03 %	0.04 %	0.05 %	0.04 %	0.05 %
	0.0321	0.0300	0.0330	0.0279	0.0319
30	1.02 %	1.24 %	1.49 %	1.45 %	1.63 %
	0.9557	0.9240	0.9483	0.9292	0.9729
31	1.90 %	2.33 %	2.79 %	2.79 %	3.14 %
	1.7547	1.7323	1.7779	1.7295	1.8719
32	0.33 %	0.41 %	0.49 %	0.50 %	0.54 %
	0.3012	0.3015	0.3149	0.3104	0.3293
33	0.14 %	0.18 %	0.19 %	0.21 %	0.26 %
	0.1332	0.1333	0.1200	0.1309	0.1523
34	2.51 %	3.11 %	3.46 %	3.71 %	3.73 %
	2.3191	2.3152	2.2070	2.3075	2.2255
35	2.75 %	3.39 %	3.44 %	3.96 %	3.99 %
	2.5457	2.5191	2.1259	2.3379	2.3119
36	1.09 %	1.35 %	1.55 %	1.64 %	1.67 %
	0.9969	1.0072	0.9303	1.0152	0.9959
37	0.40 %	0.59 %	0.59 %	0.59 %	0.63 %
	0.3644	0.3727	0.3597	0.3559	0.3739
38	1.49 %	1.54 %	2.29 %	1.75 %	1.91 %
	1.3756	1.2245	1.4559	1.0977	1.1327
39	0.44 %	0.55 %	0.65 %	0.68 %	0.66 %
	0.4107	0.4055	0.4155	0.4013	0.3233
40	0.01 %	0.01 %	0.01 %	0.02 %	0.02 %
	0.0096	0.0104	0.0099	0.0111	0.0109
41	0.01 %	0.02 %	0.00 %	0.09 %	0.03 %
	0.0017	0.0177	0.0027	0.0583	0.0191
42	0.09 %	0.05 %	0.01 %	0.16 %	0.06 %
	0.0054	0.0350	0.0055	0.0373	0.0357

GEORGETOWN SOUTH CAROLINA POINT/AREA SOURCES

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

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SOURCE	RECEPTOR 65	RECEPTOR 55	RECEPTOR 53	RECEPTOR 57	RECEPTOR 77
43	0.06 % 0.0600	0.21 % 0.1555	0.12 % 0.0754	0.31 % 0.1929	0.18 % 0.1051
44	0.08 % 0.0779	0.28 % 0.2074	0.15 % 0.0980	0.40 % 0.2455	0.23 % 0.1353
45	0.17 % 0.1570	0.50 % 0.3685	0.31 % 0.1959	0.48 % 0.3013	0.33 % 0.1984
46	0.11 % 0.1024	0.53 % 0.3906	0.27 % 0.1697	0.66 % 0.4097	0.36 % 0.2175
47	0.01 % 0.0054	0.07 % 0.0555	0.02 % 0.0112	0.13 % 0.0804	0.06 % 0.0332
48	0.00 % 0.0001	0.01 % 0.0102	0.00 % 0.0020	0.14 % 0.0841	0.06 % 0.0330
49	0.00 % 0.0022	0.05 % 0.0337	0.01 % 0.0043	0.13 % 0.0787	0.05 % 0.0302
50	2.57 % 2.3717	2.57 % 1.9100	3.29 % 2.0860	1.12 % 0.6927	1.16 % 0.6912
51	7.65 % 7.0753	2.99 % 2.2230	3.10 % 1.9616	1.00 % 0.6187	1.02 % 0.6098
52	5.72 % 5.2920	3.16 % 2.3519	3.55 % 2.2553	1.18 % 0.7313	1.21 % 0.7233
53	0.00 % 0.0000	0.00 % 0.0002	0.00 % 0.0004	0.00 % 0.0029	0.00 % 0.0009
54	0.40 % 0.3587	0.65 % 0.4855	0.81 % 0.5147	0.39 % 0.2444	0.35 % 0.2109
55	0.01 % 0.0138	0.19 % 0.1399	0.30 % 0.1929	0.49 % 0.3012	0.19 % 0.1111
56	0.00 % 0.0008	0.01 % 0.0083	0.02 % 0.0107	0.03 % 0.0155	0.04 % 0.0251
57	6.17 % 5.7053	3.32 % 2.4679	1.74 % 1.1121	0.74 % 0.4523	0.63 % 0.3742
58	20.53 % 19.0210	11.06 % 8.2251	5.90 % 3.7372	2.46 % 1.5302	2.09 % 1.2459
59	0.01 % 0.0087	0.01 % 0.0072	0.02 % 0.0102	0.01 % 0.0051	0.01 % 0.0054
60	0.00 % 0.0043	0.01 % 0.0051	0.01 % 0.0032	0.01 % 0.0059	0.01 % 0.0055
61	0.27 % 0.2523	2.69 % 2.0025	4.03 % 2.5535	1.86 % 1.1553	1.85 % 1.1059
BACK-GROUND	0.0 % 0.	0.0 % 0.	0.0 % 0.	0.0 % 0.	0.0 % 0.
TOTAL	100.0 % 92.4664	100.0 % 74.4259	100.0 % 63.3903	100.0 % 62.1512	100.0 % 59.5522

APPENDIX C

AQDM BASELINE YEAR ANALYSIS PRINTOUT

For this computer run, a background of 20 μg/m^3 was assigned. Unpaved road emissions were decreased by 50% and paved road emissions were increased by 200% as compared to those in Appendix A. The slope of the regression line was set at unity.

FINAL GEORGETOWN COUNTY, SOUTH CAROLINA POINT/AREA SOURCES

SOURCE DATA

SOURCE NUMBER	SOURCE ID.	SOURCE LOCATION (KILOMETERS) HORIZONTAL	SOURCE LOCATION (KILOMETERS) VERTICAL	SOURCE AREA SQUARE KILOMETERS	ANNUAL SOURCE EMISSION RATE (TONS/DAY) SO2	ANNUAL SOURCE EMISSION RATE (TONS/DAY) PART	STACK DATA HT (FT)	STACK DATA DIAM (FT)	STACK DATA VEL (FPS)	STACK DATA TEMP (DEG.F)
1	11	667.3	3713.4	166.30	0.0	0.912	10.0	0.0	0.0	0.
2	12	655.8	3703.9	91.90	0.0	0.967	10.0	0.0	0.0	0.
3	21	663.9	3720.1	102.40	0.0	0.556	10.0	0.0	0.0	0.
4	22	655.0	3713.5	118.50	0.0	1.212	10.0	0.0	0.0	0.
5	30	659.7	3727.4	39.10	0.0	0.372	10.0	0.0	0.0	0.
6	40	655.2	3733.1	85.90	0.0	1.592	10.0	0.0	0.0	0.
7	50	650.4	3722.5	107.30	0.0	2.442	10.0	0.0	0.0	0.
8	60	634.1	3701.5	2.50	0.0	0.080	10.0	0.0	0.0	0.
9	70	632.7	3702.0	2.60	0.0	0.046	10.0	0.0	0.0	0.
10	81	642.1	3708.4	89.10	0.0	1.124	10.0	0.0	0.0	0.
11	82	636.6	3703.0	24.50	0.0	0.673	10.0	0.0	0.0	0.
12	91	644.3	3696.5	57.20	0.0	0.990	10.0	0.0	0.0	0.
13	92	635.6	3698.5	46.60	0.0	0.993	10.0	0.0	0.0	0.
14	101	655.1	3705.2	65.30	0.0	0.912	10.0	0.0	0.0	0.
15	102	660.3	3701.5	27.40	0.0	2.923	10.0	0.0	0.0	0.
16	111	647.9	3704.0	106.50	0.0	2.019	10.0	0.0	0.0	0.
17	112	653.6	3695.9	27.50	0.0	4.553	10.0	0.0	0.0	0.
18	120	660.2	3696.9	29.10	0.0	1.674	10.0	0.0	0.0	0.
19	130	659.4	3694.7	1.50	0.0	0.105	10.0	0.0	0.0	0.
20	140	658.9	3694.0	0.50	0.0	0.055	10.0	0.0	0.0	0.
21	150	657.6	3695.0	1.90	0.0	0.085	10.0	0.0	0.0	0.
22	160	656.9	3693.9	2.50	0.0	0.013	10.0	0.0	0.0	0.
23	170	659.4	3693.3	0.80	0.0	0.047	10.0	0.0	0.0	0.
24	180	659.3	3693.3	0.90	0.0	0.115	10.0	0.0	0.0	0.
25	190	660.3	3692.7	0.80	0.0	0.025	10.0	0.0	0.0	0.
26	200	660.9	3693.2	0.20	0.0	0.007	10.0	0.0	0.0	0.
27	210	659.3	3691.5	3.10	0.0	0.063	10.0	0.0	0.0	0.
28	220	658.1	3689.2	3.60	0.0	0.122	10.0	0.0	0.0	0.
29	230	680.2	3710.4	23.50	0.0	0.221	10.0	0.0	0.0	0.
30	240	677.0	3710.4	52.30	0.0	1.613	10.0	0.0	0.0	0.
31	250	669.1	3699.7	32.90	0.0	1.809	10.0	0.0	0.0	0.
32	261	670.2	3695.5	51.40	0.0	0.579	10.0	0.0	0.0	0.
33	262	655.2	3689.1	59.10	0.0	0.204	10.0	0.0	0.0	0.
34	271	648.8	3687.2	118.20	0.0	2.064	10.0	0.0	0.0	0.
35	272	655.3	3699.2	34.30	0.0	1.169	10.0	0.0	0.0	0.
36	280	635.2	3692.0	113.90	0.0	1.467	10.0	0.0	0.0	0.
37	291	655.6	3680.0	224.10	0.0	0.556	10.0	0.0	0.0	0.
38	292	657.3	3684.4	11.20	0.0	0.523	10.0	0.0	0.0	0.
39	293	638.3	3683.0	148.60	0.0	0.558	10.0	0.0	0.0	0.
40	1140 1 1 2	630.0	3700.1	0.0	0.0	0.033	42.0	1.0	33.0	200.
41	1140 2 1	658.5	3692.6	0.0	2.055	0.444	250.0	11.3	50.0	180.
42	1140 2 2	658.5	3692.6	0.0	2.055	0.901	250.0	11.3	50.0	190.
43	1140 2 3	658.5	3692.6	0.0	0.0	0.274	250.0	4.5	21.0	155.
44	1140 2 4	658.5	3692.6	0.0	0.0	0.356	250.0	4.5	21.0	165.
45	1140 2 5	659.5	3692.6	0.0	0.0	0.186	100.0	5.0	25.0	165.
46	1140 2 6 7	659.5	3692.6	0.0	0.0	0.586	100.0	6.1	43.2	190.
47	1140 2 8	659.5	3692.6	0.0	3.838	0.293	70.0	6.5	40.0	600.
48	1140 2 914	658.5	3692.5	0.0	13.449	5.152	250.0	15.0	40.0	500.
49	1140 21516	658.5	3692.6	0.0	7.677	0.586	90.0	8.0	50.0	600.
50	1140 3 1	659.1	3693.3	0.0	0.0	0.058	90.0	2.3	11.9	90.
51	1140 3 2	659.1	3693.2	0.0	0.0	0.055	28.0	2.0	35.0	90.
52	1140 3 3	659.1	3693.3	0.0	0.0	0.058	33.0	2.5	35.0	90.
53	1140 3 4	659.1	3693.3	0.0	0.003	0.052	193.0	9.9	44.0	300.

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|  54   1140  4 1 3 |   658.9 |  3693.4 |     0.0 |   0.0          0.022 |  80.0  4.5   2.0   215. |
|  55   1140  4 4   |   658.9 |  3693.4 |     0.0 |   0.0          0.364 | 120.0 31.3   9.0    90. |
|  56   1140  4 6   |   658.9 |  3693.4 |     0.0 |   0.159        0.019 |  80.0  4.0  40.0   500. |
|  57   1140  4 7   |   658.9 |  3693.4 |     0.0 |   0.003        0.032 |  40.0  0.0   0.0   600. |
|  58   1140  4 8   |   658.9 |  3693.6 |     0.0 |   0.0          0.110 |  40.0  0.0   0.0    80. |
|  59   1140  5 1   |   653.5 |  3689.4 |     0.0 |  36.932        1.515 | 400.0 20.0  42.2   300. |
|  60   1140  8 1   |   644.1 |  3698.1 |     0.0 |   0.014        0.047 |  40.0  3.0  50.0   400. |
|  61   1140  9 2   |   658.9 |  3693.0 |     0.0 |   0.0          0.184 |  48.0  4.0   9.9   200. |
FINAL GEORGETOWN COUNTY, SOUTH CAROLINA  POINT/AREA SOURCES


RECEPTOR DATA

LOCATIONS TO BE USED AS RECEPTORS IN ADDITION TO THE 100 RECTANGULAR GRID LOCATIONS

  RECEPTOR      X-COORDINATE     Y-COORDINATE
   NUMBER       (KILOMETERS)     (KILOMETERS)

    101            685.0            3720.0

    102            633.0            3703.0

    103            655.0            3730.0

    104            570.0            3590.0

    105            644.0            3693.0

    106            660.0            3710.0

    107            680.0            3710.0
```

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                         FINAL GEORGETOWN COUNTY, SOUTH CAROLINA  POINT/AREA SOURCES

                   METEOROLOGICAL INPUT DATA FOR  ANNUAL


MIXING DEPTH = 1300. METERS
AMBIENT TEMPERATURE =    65. DEGREES,FAHRENHEIT
AMBIENT PRESSURE = 1013. MILLIBARS

STABILITY CLASS  1
                                          WINDSPEED CLASS

 WIND DIRECTION         1         2        3         4         5         6

     N              .00045    .00041    .0        .0        .0        .0

     NNE            .00012    .00025    .0        .0        .0        .0

     NE             .00003    .00005    .0        .0        .0        .0

     ENE            .00010    .00014    .0        .0        .0        .0

     E              .00039    .00078    .0        .0        .0        .0

     ESE            .00031    .00054    .0        .0        .0        .0

     SE             .00026    .00043    .0        .0        .0        .0

     SSE            .00029    .00101    .0        .0        .0        .0

     S              .00036    .00059    .0        .0        .0        .0

     SSW            .00014    .00018    .0        .0        .0        .0

     SW             .00030    .00023    .0        .0        .0        .0

     WSW            .00053    .00034    .0        .0        .0        .0

     W              .00080    .00055    .0        .0        .0        .0

     WNW            .00031    .00030    .0        .0        .0        .0

     NW             .00023    .00027    .0        .0        .0        .0

     NNW            .00034    .00030    .0        .0        .0        .0
```

```
                    FINAL GEORGETOWN COUNTY, SOUTH CAROLINA  POINT/AREA SOURCES

               METEOROLOGICAL INPUT DATA FOR  ANNUAL

  STABILITY CLASS  2                   WINDSPEED CLASS
                         1        2        3       4        5        6
  WIND DIRECTION
      N               .00507   .00254   .00101   .0       .0       .0
      NNE             .00239   .00178   .00103   .0       .0       .0
      NE              .00202   .00156   .00062   .0       .0       .0
      ENE             .00131   .00114   .00075   .0       .0       .0
      E               .00271   .00382   .00233   .0       .0       .0
      ESE             .00239   .00435   .00261   .0       .0       .0
      SE              .00191   .00385   .00224   .0       .0       .0
      SSE             .00222   .00448   .00325   .0       .0       .0
      S               .00246   .00457   .00524   .0       .0       .0
      SSW             .00140   .00128   .00062   .0       .0       .0
      SW              .00130   .00103   .00046   .0       .0       .0
      WSW             .00217   .00178   .00119   .0       .0       .0
      W               .00393   .00380   .00181   .0       .0       .0
      WNW             .00195   .00213   .00089   .0       .0       .0
      NW              .00110   .00135   .00062   .0       .0       .0
      NNW             .00271   .00112   .00062   .0       .0       .0
```

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                    FINAL GEORGETOWN COUNTY, SOUTH CAROLINA  POINT/AREA SOURCES

                METEOROLOGICAL INPUT DATA FOR  ANNUAL

TABILITY CLASS  3
                                              WINDSPEED CLASS
 WIND DIRECTION         1         2         3         4         5         6
      N              .00237    .00407    .00527    .00045    .0        .0
      NNE            .00132    .00293    .00392    .00034    .0        .0
      NE             .00100    .00258    .00268    .00005    .0        .0
      ENE            .00075    .00213    .00272    .00018    .0        .0
      E              .00119    .00352    .00858    .00080    .0        .0
      ESE            .00113    .00361    .00549    .00023    .0        .0
      SE             .00103    .00306    .00364    .00023    .0        .0
      SSE            .00103    .00400    .00533    .00039    .0        .0
      S              .00168    .00492    .01578    .00329    .00007    .0
      SSW            .00080    .00201    .00501    .00071    .00002    .0
      SW             .00092    .00159    .00174    .00007    .0        .0
      WSW            .00067    .00215    .00242    .00018    .0        .0
      W              .00129    .00412    .00479    .00039    .0        .0
      WNW            .00055    .00256    .00341    .00018    .00002    .0
      NW             .00075    .00199    .00226    .00016    .0        .0
      NNW            .00112    .00192    .00254    .00043    .0        .0
```

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                  FINAL GEORGETOWN COUNTY, SOUTH CAROLINA  POINT/AREA SOURCES

            METEOROLOGICAL INPUT DATA FOR  ANNUAL

  STABILITY CLASS  4
                                            WINDSPEED CLASS
   WIND DIRECTION         1        2        3        4        5        6
        N              .00165   .00521   .00743   .00572   .00053   .0
        NNE            .00107   .00419   .00542   .00247   .00016   .0
        NE             .00095   .00373   .00359   .00103   .00007   .0
        ENE            .00094   .00290   .00361   .00096   .00005   .00002
        E              .00109   .00454   .00583   .00210   .0       .0
        ESE            .00067   .00288   .00226   .00062   .00002   .0
        SE             .00046   .00199   .00158   .00069   .00002   .0
        SSE            .00069   .00322   .00210   .00059   .00002   .0
        S              .00065   .00483   .00901   .00702   .00025   .0
        SSW            .00039   .00261   .00508   .00487   .00021   .00002
        SW             .00037   .00213   .00153   .00082   .0       .0
        WSW            .00063   .00204   .00178   .00107   .0       .0
        W              .00078   .00274   .00293   .00290   .00023   .0
        WNW            .00040   .00185   .00222   .00295   .00030   .00002
        NW             .00044   .00105   .00222   .00197   .00039   .0
        NNW            .00047   .00181   .00233   .00293   .00046   .00007
```

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                    FINAL GEORGETOWN COUNTY, SOUTH CAROLINA  POINT/A -- SOURCE

           METEOROLOGICAL INPUT DATA FOR  ANNUAL

STABILITY CLASS  5
                                              WINDSPEED CLASS
 WIND DIRECTION         1        2        3        4        5        6

     N               .05828   .02109   .C0910   .00249   .00016   .00007
     NNE             .02534   .01603   .00883   .00117   .00002   .0
     NE              .01487   .01155   .00586   .00105   .0       .0
     ENE             .00844   .00512   .00389   .00052   .00005   .0
     E               .01483   .01082   .00732   .00087   .00002   .0
     ESE             .00944   .00556   .00224   .00018   .0       .0
     SE              .00801   .00347   .00160   .00027   .0       .0
     SSE             .01039   .00517   .00196   .00037   .00002   .0
     S               .02135   .01297   .00731   .00144   .00007   .0
     SSW             .02715   .01683   .00949   .00162   .00014   .0
     SW              .02829   .01255   .00416   .00023   .00002   .0
     WSW             .02040   .00908   .00242   .00014   .00002   .0
     W               .02654   .01251   .C0629   .00090   .00016   .0
     WNW             .01195   .00617   .00398   .00087   .00011   .00002
     NW              .00824   .00498   .00394   .00128   .00014   .0
     NNW             .02321   .00702   .00373   .00185   .00016   .00002
```

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                    FINAL GEORGETOWN COUNTY, SOUTH CAROLINA  POINT/AREA SOURCES

INPUT REGRESSION PARAMETERS ARE:
     POLLUTANT          Y-INTERCEPT - - - -   --SLOPE--

     PARTICULATES            0.0            1.0000
```

FINAL GEORGETOWN COUNTY, SOUTH CAROLINA POINT/AREA SOURCES

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	RECEPTOR LOCATION (KILOMETERS) VERT.	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) PARTICULATES
1	653.0	3689.0	0.	48.
2	653.0	3690.0	0.	48.
3	653.0	3691.0	0.	49.
4	653.0	3692.0	0.	47.
5	653.0	3693.0	0.	48.
6	653.0	3694.0	0.	52.
7	653.0	3695.0	0.	52.
8	653.0	3696.0	0.	51.
9	653.0	3697.0	0.	51.
10	653.0	3698.0	0.	49.
11	654.0	3689.0	0.	49.
12	654.0	3690.0	0.	49.
13	654.0	3691.0	0.	49.
14	654.0	3692.0	0.	48.
15	654.0	3693.0	0.	49.
16	654.0	3694.0	0.	53.
17	654.0	3695.0	0.	53.
18	654.0	3696.0	0.	52.
19	654.0	3697.0	0.	52.
20	654.0	3698.0	0.	51.
21	655.0	3689.0	0.	49.
22	655.0	3690.0	0.	49.
23	655.0	3691.0	0.	49.
24	655.0	3692.0	0.	49.
25	655.0	3693.0	0.	49.
26	655.0	3694.0	0.	53.
27	655.0	3695.0	0.	52.
28	655.0	3696.0	0.	52.
29	655.0	3697.0	0.	52.
30	655.0	3698.0	0.	51.
31	656.0	3689.0	0.	50.
32	656.0	3690.0	0.	50.
33	656.0	3691.0	0.	50.
34	656.0	3692.0	0.	50.
35	656.0	3693.0	0.	49.
36	656.0	3694.0	0.	50.
37	656.0	3695.0	0.	52.
38	656.0	3696.0	0.	52.
39	656.0	3697.0	0.	51.
40	656.0	3698.0	0.	48.

FINAL GEORGETOWN COUNTY, SOUTH CAROLINA POINT/AREA SOURCES

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	VERT	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	PARTICULATES
41	657.0	3689.0	0.	51.
42	657.0	3690.0	0.	51.
43	657.0	3691.0	0.	52.
44	657.0	3692.0	0.	51.
45	657.0	3693.0	0.	52.
46	657.0	3694.0	0.	50.
47	657.0	3695.0	0.	49.
48	657.0	3696.0	0.	49.
49	657.0	3697.0	0.	47.
50	657.0	3698.0	0.	47.
51	658.0	3689.0	0.	54.
52	658.0	3690.0	0.	54.
53	658.0	3691.0	0.	54.
54	658.0	3692.0	0.	55.
55	658.0	3693.0	0.	59.
56	658.0	3694.0	0.	55.
57	658.0	3695.0	0.	54.
58	658.0	3696.0	0.	53.
59	658.0	3697.0	0.	52.
60	658.0	3698.0	0.	51.
61	659.0	3689.0	0.	53.
62	659.0	3690.0	0.	54.
63	659.0	3691.0	0.	58.
64	659.0	3692.0	0.	66.
65	659.0	3693.0	0.	90.
66	659.0	3694.0	0.	85.
67	659.0	3695.0	0.	63.
68	659.0	3696.0	0.	56.
69	659.0	3697.0	0.	53.
70	659.0	3698.0	0.	52.
71	660.0	3689.0	0.	49.
72	660.0	3690.0	0.	50.
73	660.0	3691.0	0.	51.
74	660.0	3692.0	0.	53.
75	660.0	3693.0	0.	58.
76	660.0	3694.0	0.	60.
77	660.0	3695.0	0.	59.
78	660.0	3696.0	0.	55.
79	660.0	3697.0	0.	53.
80	660.0	3698.0	0.	52.

FINAL GEORGETOWN COUNTY, SOUTH CAROLINA   POINT/AREA SOURCES

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------------------------------------------------------------------------
I                                                                      I
I           RECEPTOR CONCENTRATION DATA                                I
I          I                     I                                     I
I RECEPTOR I  RECEPTOR LOCATION  I     EXPECTED ARITHMETIC MEAN        I
I  NUMBER  I---------------------I-------------------------------------I
I          I    (KILOMETERS)     I     (MICROGRAMS/CU. METER)          I
I          I   HORIZ  I   VERT   I      SO2       I  PARTICULATES      I
I          I          I          I                I                    I
I    81    I   661.0  I  3689.0  I       0.       I       45.          I
I    82    I   661.0  I  3690.0  I       0.       I       47.          I
I    83    I   661.0  I  3691.0  I       0.       I       47.          I
I    84    I   661.0  I  3692.0  I       0.       I       49.          I
I    85    I   661.0  I  3693.0  I       0.       I       53.          I
I    86    I   661.0  I  3694.0  I       0.       I       52.          I
I    87    I   661.0  I  3695.0  I       0.       I       53.          I
I    88    I   661.0  I  3696.0  I       0.       I       53.          I
I    89    I   661.0  I  3697.0  I       0.       I       52.          I
I    90    I   661.0  I  3698.0  I       0.       I       51.          I
I    91    I   662.0  I  3689.0  I       0.       I       44.          I
I    92    I   662.0  I  3690.0  I       0.       I       45.          I
I    93    I   662.0  I  3691.0  I       0.       I       45.          I
I    94    I   662.0  I  3692.0  I       0.       I       47.          I
I    95    I   662.0  I  3693.0  I       0.       I       49.          I
I    96    I   662.0  I  3694.0  I       0.       I       48.          I
I    97    I   662.0  I  3695.0  I       0.       I       50.          I
I    98    I   662.0  I  3696.0  I       0.       I       50.          I
I    99    I   662.0  I  3697.0  I       0.       I       50.          I
I   100    I   662.0  I  3698.0  I       0.       I       49.          I
I   101    I   685.0  I  3720.0  I       0.       I       32.          I
I   102    I   633.0  I  3703.0  I       0.       I       31.          I
I   103    I   655.0  I  3730.0  I       0.       I       33.          I
I   104    I   670.0  I  3690.0  I       0.       I       39.          I
I   105    I   644.0  I  3693.0  I       0.       I       38.          I
I   106    I   660.0  I  3710.0  I       0.       I       42.          I
I   107    I   680.0  I  3710.0  I       0.       I       36.          I
```

```
FINAL GEORGETOWN COUNTY, SOUTH CAROLINA  POINT/AREA SOURCES

SOURCE CONTRIBUTIONS - FIVE MAXIMUM  RECEPTORS

ANNUAL   PARTICULATES

MICROGRAMS PER CUBIC METER


-----------------------------------------------------------------------------
| SOURCE   |  RECEPTOR  |  RECEPTOR  |  RECEPTOR  |  RECEPTOR  |  REC PTOR  |
|          |    65      |    66      |    64      |    67      |    76      |
|    1     |  0.55 %    |  0.58 %    |  0.74 %    |  0.79 %    |  0.84 %    |
|          |  0.4913    |  0.4522    |  0.4863    |  0.4905    |  0.5069    |
|    2     |  0.75 %    |  0.79 %    |  1.01 %    |  1.08 %    |  1.20 %    |
|          |  0.6716    |  0.6751    |  0.6628    |  0.6764    |  0.7246    |
|    3     |  0.40 %    |  0.43 %    |  0.53 %    |  0.59 %    |  0.62 %    |
|          |  0.3588    |  0.3683    |  0.3496    |  0.3672    |  0.3763    |
|    4     |  0.88 %    |  0.93 %    |  1.20 %    |  1.28 %    |  1.27 %    |
|          |  0.7892    |  0.7931    |  0.7944    |  0.7981    |  0.7634    |
|    5     |  0.28 %    |  0.30 %    |  0.37 %    |  0.42 %    |  0.43 %    |
|          |  0.2490    |  0.2553    |  0.2430    |  0.2619    |  0.2596    |
|    6     |  0.92 %    |  0.99 %    |  1.24 %    |  1.38 %    |  1.34 %    |
|          |  0.8302    |  0.8457    |  0.8152    |  0.8619    |  0.8102    |
|    7     |  1.32 %    |  1.42 %    |  1.78 %    |  1.98 %    |  1.93 %    |
|          |  1.1881    |  1.2119    |  1.1639    |  1.2367    |  1.1649    |
|    8     |  0.03 %    |  0.03 %    |  0.03 %    |  0.04 %    |  0.04 %    |
|          |  0.0227    |  0.0249    |  0.0209    |  0.0269    |  0.0244    |
|    9     |  0.01 %    |  0.02 %    |  0.02 %    |  0.02 %    |  0.02 %    |
|          |  0.0123    |  0.0134    |  0.0113    |  0.0144    |  0.0132    |
|   10     |  0.33 %    |  0.36 %    |  0.44 %    |  0.51 %    |  0.50 %    |
|          |  0.2954    |  0.3078    |  0.2897    |  0.3197    |  0.3029    |
|   11     |  0.23 %    |  0.26 %    |  0.28 %    |  0.36 %    |  0.36 %    |
|          |  0.2038    |  0.2213    |  0.1822    |  0.2291    |  0.2142    |
|   12     |  0.53 %    |  0.58 %    |  0.68 %    |  0.84 %    |  0.82 %    |
|          |  0.4740    |  0.4933    |  0.4477    |  0.5236    |  0.4919    |
|   13     |  0.34 %    |  0.39 %    |  0.45 %    |  0.56 %    |  0.53 %    |
|          |  0.3094    |  0.3306    |  0.2971    |  0.3493    |  0.3191    |
|   14     |  0.85 %    |  0.91 %    |  1.15 %    |  1.26 %    |  1.21 %    |
|          |  0.7543    |  0.7754    |  0.7519    |  0.7872    |  0.7274    |
|   15     |  4.85 %    |  5.22 %    |  6.49 %    |  7.40 %    |  7.86 %    |
|          |  4.3532    |  4.4589    |  4.2505    |  4.5342    |  4.7422    |
|   16     |  0.98 %    |  1.03 %    |  1.33 %    |  1.40 %    |  1.33 %    |
|          |  0.8924    |  0.8799    |  0.8725    |  0.8745    |  0.8045    |
|   17     |  5.01 %    |  4.92 %    |  6.67 %    |  7.77 %    |  6.62 %    |
|          |  4.4953    |  4.2069    |  4.3658    |  4.8555    |  3.9226    |
|   18     |  2.93 %    |  3.22 %    |  4.10 %    |  7.08 %    |  5.42 %    |
|          |  2.5375    |  2.7501    |  2.6835    |  4.4237    |  3.2710    |
|   19     |  0.99 %    |  1.80 %    |  1.05 %    |  5.54 %    |  2.00 %    |
|          |  0.8903    |  1.5370    |  0.6853    |  3.4553    |  1.2071    |
|   20     |  1.80 %    |  7.76 %    |  0.93 %    |  1.84 %    |  1.63 %    |
|          |  1.6179    |  6.0251    |  0.6119    |  1.1428    |  0.9802    |
|   21     |  0.35 %    |  0.62 %    |  0.50 %    |  1.10 %    |  0.41 %    |
|          |  0.3156    |  0.5332    |  0.3259    |  0.5971    |  0.2497    |
```

FINAL GEORGETOWN COUNTY, SOUTH CAROLINA POINT/AREA SOURCES

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 55	RECEPTOR 55	RECEPTOR 64	RECEPTOR 57	RECEPTOR 75
22	0.04 % 0.0395	0.06 % 0.0495	0.05 % 0.0335	0.08 % 0.0523	0.07 % 0.0407
23	0.90 % 0.7172	1.19 % 1.0072	1.01 % 0.6533	0.54 % 0.3351	0.54 % 0.3251
24	6.34 % 5.5943	2.07 % 1.7541	3.08 % 2.0180	1.15 % 0.7136	3.70 % 2.2290
25	0.21 % 0.1882	0.11 % 0.0905	0.32 % 0.2120	0.11 % 0.0594	0.43 % 0.2593
26	0.04 % 0.0372	0.03 % 0.0275	0.03 % 0.0213	0.03 % 0.0155	0.12 % 0.0701
27	0.27 % 0.2455	0.23 % 0.1971	1.85 % 1.2143	0.26 % 0.1529	0.39 % 0.2331
28	0.39 % 0.3450	0.36 % 0.3042	0.63 % 0.4135	0.40 % 0.2502	0.54 % 0.3257
29	0.06 % 0.0577	0.06 % 0.0539	0.09 % 0.0511	0.08 % 0.0499	0.10 % 0.0505
30	0.63 % 0.5696	0.65 % 0.5565	0.87 % 0.5712	0.87 % 0.5415	0.99 % 0.5335
31	1.12 % 1.0067	1.16 % 0.9911	1.55 % 1.0171	1.59 % 0.9993	1.77 % 1.0595
32	0.28 % 0.2535	0.30 % 0.2539	0.40 % 0.2549	0.42 % 0.2512	0.44 % 0.2555
33	0.10 % 0.0877	0.10 % 0.0877	0.12 % 0.0790	0.14 % 0.0855	0.15 % 0.0905
34	1.42 % 1.2778	1.49 % 1.2756	1.86 % 1.2150	2.03 % 1.2714	2.04 % 1.2313
35	1.63 % 1.4659	1.70 % 1.4507	1.93 % 1.2545	2.21 % 1.3908	2.33 % 1.4045
36	0.64 % 0.5753	0.69 % 0.5813	0.87 % 0.5715	0.94 % 0.5855	0.94 % 0.5594
37	0.26 % 0.2339	0.28 % 0.2379	0.36 % 0.2360	0.37 % 0.2341	0.39 % 0.2353
38	0.80 % 0.7166	0.75 % 0.6374	1.16 % 0.7578	0.91 % 0.5555	1.10 % 0.5552
39	0.30 % 0.2719	0.31 % 0.2684	0.42 % 0.2752	0.42 % 0.2657	0.44 % 0.2531
40	0.01 % 0.0094	0.01 % 0.0104	0.01 % 0.0089	0.02 % 0.0111	0.02 % 0.0102
41	0.00 % 0.0017	0.02 % 0.0177	0.00 % 0.0027	0.08 % 0.0483	0.02 % 0.0107
42	0.00 % 0.0034	0.04 % 0.0359	0.01 % 0.0055	0.16 % 0.0979	0.04 % 0.0218

FINAL GEORGETOWN COUNTY, SOUTH CAROLINA POINT/AREA SOURCES

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 63	RECEPTOR 66	RECEPTOR 64	RECEPTOR 57	RECEPTOR 75
43	0.07 % 0.0600	0.19 % 0.1596	0.12 % 0.0754	0.30 % 0.1898	0.13 % 0.0795
44	0.09 % 0.0779	0.24 % 0.2074	0.15 % 0.0980	0.39 % 0.2455	0.17 % 0.1034
45	0.17 % 0.1570	0.43 % 0.3685	0.30 % 0.1959	0.48 % 0.3013	0.30 % 0.1785
46	0.11 % 0.1024	0.46 % 0.3906	0.26 % 0.1699	0.65 % 0.4087	0.24 % 0.1424
47	0.01 % 0.0054	0.07 % 0.0555	0.02 % 0.0112	0.13 % 0.0804	0.03 % 0.0185
48	0.00 % 0.0001	0.01 % 0.0102	0.00 % 0.0020	0.13 % 0.0841	0.02 % 0.0111
49	0.00 % 0.0022	0.04 % 0.0337	0.01 % 0.0043	0.13 % 0.0787	0.03 % 0.0152
50	2.64 % 2.3717	2.24 % 1.9100	3.20 % 2.0950	1.11 % 0.6927	2.01 % 1.2109
51	7.88 % 7.0753	2.60 % 2.2230	3.02 % 1.9816	0.99 % 0.6187	1.97 % 1.1925
52	5.90 % 5.2920	2.75 % 2.3519	3.46 % 2.2653	1.17 % 0.7319	2.21 % 1.3337
53	0.00 % 0.0000	0.00 % 0.0002	0.00 % 0.0004	0.00 % 0.0028	0.00 % 0.0002
54	0.41 % 0.3687	0.57 % 0.4856	0.79 % 0.5147	0.39 % 0.2444	0.41 % 0.2480
55	0.02 % 0.0136	0.16 % 0.1399	0.29 % 0.1898	0.48 % 0.3019	0.13 % 0.0785
56	0.00 % 0.0008	0.01 % 0.0083	0.02 % 0.0107	0.03 % 0.0165	0.01 % 0.0042
57	6.36 % 5.7063	2.89 % 2.4678	1.70 % 1.1121	0.73 % 0.4593	0.99 % 0.5983
58	14.19 % 12.7396	17.46 % 14.9158	4.59 % 3.0056	3.08 % 1.9305	3.36 % 2.0271
59	0.01 % 0.0087	0.01 % 0.0072	0.02 % 0.0102	0.01 % 0.0061	0.01 % 0.0077
60	0.01 % 0.0045	0.01 % 0.0051	0.01 % 0.0039	0.01 % 0.0058	0.01 % 0.0049
61	0.28 % 0.2537	2.34 % 2.0025	3.93 % 2.5736	1.86 % 1.1663	1.91 % 1.1516
BACK-GROUND	22.28 % 20.	23.41 % 20.	30.53 % 20.	31.96 % 20.	33.17 % 20.
TOTAL	100.0 % 89.7922	100.0 % 85.4505	100.0 % 65.5321	100.0 % 62.6111	100.0 % 60.3201

APPENDIX D

AQDM UNPAVED ROADS PRINTOUT

The attached computer printout for unpaved roads only is based on the unrevised emissions. (See Chapter VI of the report.) To account for the revised emissions, concentrations at each receptor should be divided by two.

GEORGETOWN SOUTH CAROLINA UNPAVED ROADS

SOURCE DATA

SOURCE NUMBER	SOURCE ID.	SOURCE LOCATION (KILOMETERS) HORIZONTAL	SOURCE LOCATION (KILOMETERS) VERTICAL	SOURCE AREA SQUARE KILOMETERS	ANNUAL SOURCE EMISSION RATE (TONS/DAY) SO2	ANNUAL SOURCE EMISSION RATE (TONS/DAY) PART	STACK DATA HT (FT)	STACK DATA DIAM (FT)	STACK DATA VEL (FPS)	STACK DATA TEMP (DEG.F)
1	11	657.3	3713.4	155.30	0.0	0.909	10.0	0.0	0.0	0.
2	12	665.8	3703.9	51.90	0.0	1.608	10.0	0.0	0.0	0.
3	21	653.9	3720.1	102.30	0.0	0.301	10.0	0.0	0.0	0.
4	22	656.0	3713.5	119.50	0.0	1.797	10.0	0.0	0.0	0.
5	30	655.7	3727.4	39.10	0.0	0.456	10.0	0.0	0.0	0.
6	40	655.2	3733.1	95.30	0.0	3.001	10.0	0.0	0.0	0.
7	50	650.4	3722.5	107.30	0.0	4.425	10.0	0.0	0.0	0.
8	60	634.1	3701.5	2.50	0.0	0.0	10.0	0.0	0.0	0.
9	70	632.7	3702.0	2.60	0.0	0.0	10.0	0.0	0.0	0.
10	81	642.1	3708.4	89.10	0.0	1.539	10.0	0.0	0.0	0.
11	82	636.6	3703.0	24.50	0.0	1.153	10.0	0.0	0.0	0.
12	91	654.3	3696.5	57.20	0.0	1.495	10.0	0.0	0.0	0.
13	92	635.6	3698.5	46.60	0.0	1.353	10.0	0.0	0.0	0.
14	101	655.1	3705.2	65.30	0.0	1.479	10.0	0.0	0.0	0.
15	102	650.3	3701.5	27.40	0.0	5.496	10.0	0.0	0.0	0.
16	111	647.8	3704.0	106.50	0.0	3.523	10.0	0.0	0.0	0.
17	112	653.5	3695.9	27.60	0.0	8.682	10.0	0.0	0.0	0.
18	120	660.2	3696.9	29.10	0.0	3.095	10.0	0.0	0.0	0.
19	130	655.4	3694.7	1.50	0.0	0.0	10.0	0.0	0.0	0.
20	140	658.9	3694.0	0.50	0.0	0.0	10.0	0.0	0.0	0.
21	150	657.6	3695.0	1.90	0.0	0.0	10.0	0.0	0.0	0.
22	160	656.9	3693.9	2.50	0.0	0.0	10.0	0.0	0.0	0.
23	170	658.4	3693.3	0.80	0.0	0.0	10.0	0.0	0.0	0.
24	180	659.3	3693.3	0.90	0.0	0.0	10.0	0.0	0.0	0.
25	190	660.3	3692.7	0.80	0.0	0.0	10.0	0.0	0.0	0.
26	200	660.9	3693.2	0.20	0.0	0.0	10.0	0.0	0.0	0.
27	210	659.3	3691.5	3.10	0.0	0.0	10.0	0.0	0.0	0.
28	220	658.1	3695.2	3.60	0.0	0.0	10.0	0.0	0.0	0.
29	230	660.2	3710.4	23.50	0.0	0.0	10.0	0.0	0.0	0.
30	240	677.0	3710.4	52.30	0.0	2.452	10.0	0.0	0.0	0.
31	250	669.1	3695.7	32.90	0.0	2.962	10.0	0.0	0.0	0.
32	261	670.2	3695.5	51.40	0.0	0.454	10.0	0.0	0.0	0.
33	262	665.2	3688.1	69.10	0.0	0.214	10.0	0.0	0.0	0.
34	271	648.8	3697.2	116.20	0.0	3.453	10.0	0.0	0.0	0.
35	272	655.3	3685.2	34.30	0.0	1.969	10.0	0.0	0.0	0.
36	280	635.2	3692.0	112.90	0.0	2.290	10.0	0.0	0.0	0.
37	291	655.6	3680.0	224.10	0.0	0.706	10.0	0.0	0.0	0.
38	292	657.3	3684.4	11.20	0.0	0.981	10.0	0.0	0.0	0.
39	293	638.3	3683.0	158.50	0.0	0.905	10.0	0.0	0.0	0.

```
                    GEORGETOWN SOUTH CAROLINA     UNPAVED ROADS

                 METEOROLOGICAL INPUT DATA FOR  ANNUAL


MIXING DEPTH = 1300. METERS
AMBIENT TEMPERATURE =    65. DEGREES,FAHRENHEIT
AMBIENT PRESSURE = 1013. MILLIBARS

STABILITY CLASS  1
                                        WINDSPEED CLASS

 WIND DIRECTION        1        2        3        4        5        6

      N             .00046   .00041   .0       .0       .0       .0

      NNE           .00012   .00025   .0       .0       .0       .0

      NE            .00003   .00005   .0       .0       .0       .0

      ENE           .00010   .00014   .0       .0       .0       .0

      E             .00039   .00079   .0       .0       .0       .0

      ESE           .00031   .00064   .0       .0       .0       .0

      SE            .00026   .00043   .0       .0       .0       .0

      SSE           .00029   .00101   .0       .0       .0       .0

      S             .00036   .00059   .0       .0       .0       .0

      SSW           .00014   .00019   .0       .0       .0       .0

      SW            .00030   .00023   .0       .0       .0       .0

      WSW           .00053   .00034   .0       .0       .0       .0

      W             .00090   .00055   .0       .0       .0       .0

      WNW           .00031   .00030   .0       .0       .0       .0

      NW            .00023   .00027   .0       .0       .0       .0

      NNW           .00034   .00030   .0       .0       .0       .0
```

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                  GEORGETOWN SOUTH CAROLINA     UNPAVED ROADS

              METEOROLOGICAL INPUT DATA FOR  ANNUAL

STABILITY CLASS  2
                                       WINDSPEED CLASS
 WIND DIRECTION        1         2         3        4         5         6
      N             .00507    .00254    .00101    .0        .0        .0
      NNE           .00239    .00178    .00103    .0        .0        .0
      NE            .00202    .00156    .00062    .0        .0        .0
      ENE           .00131    .00114    .00075    .0        .0        .0
      E             .00271    .00362    .00233    .0        .0        .0
      ESE           .00239    .00435    .00261    .0        .0        .0
      SE            .00191    .00386    .00224    .0        .0        .0
      SSE           .00222    .00448    .00325    .0        .0        .0
      S             .00245    .00457    .00524    .0        .0        .0
      SSW           .00140    .00128    .00062    .0        .0        .0
      SW            .00130    .00103    .00046    .0        .0        .0
      WSW           .00217    .00178    .00117    .0        .0        .0
      W             .00393    .00390    .00181    .0        .0        .0
      WNW           .00135    .00213    .00089    .0        .0        .0
      NW            .00110    .00135    .00062    .0        .0        .0
      NNW           .00271    .00112    .00062    .0        .0        .0
```

D. 4

GEORGETOWN SOUTH CAROLINA   UNPAVED ROADS

METEOROLOGICAL INPUT DATA FOR ANNUAL

STABILITY CLASS 3

WIND DIRECTION	WINDSPEED CLASS 1	2	3	4	5	6
N	.00237	.00407	.00627	.00046	.0	.0
NNE	.00132	.00253	.00392	.00034	.0	.0
NE	.00100	.00259	.00269	.00035	.0	.0
ENE	.00076	.00213	.00272	.00018	.0	.0
E	.00119	.00352	.00859	.00090	.0	.0
ESE	.00113	.00361	.00549	.00023	.0	.0
SE	.00103	.00306	.00364	.00023	.0	.0
SSE	.00103	.00400	.00533	.00039	.0	.0
S	.00169	.00452	.01578	.00329	.00007	.0
SSW	.00090	.00201	.00501	.00071	.00002	.0
SW	.00092	.00158	.00174	.00007	.0	.0
WSW	.00067	.00215	.00242	.00018	.0	.0
W	.00129	.00412	.00478	.00039	.0	.0
WNW	.00055	.00256	.00341	.00018	.00002	.0
NW	.00075	.00159	.00226	.00016	.0	.0
NNW	.00112	.00192	.00254	.00043	.0	.0

GEORGETOWN SOUTH CAROLINA   UNPAVED ROADS

METEOROLOGICAL INPUT DATA FOR ANNUAL

STABILITY CLASS 4

	WINDSPEED CLASS					
WIND DIRECTION	1	2	3	4	5	6
N	.00165	.00521	.00743	.00572	.00052	.0
NNE	.00107	.00419	.00542	.00247	.00015	.0
NE	.00095	.00373	.00359	.00103	.00007	.0
ENE	.00094	.00250	.00351	.00095	.00005	.00002
E	.00109	.00464	.00583	.00210	.0	.0
ESE	.00067	.00258	.00226	.00062	.00002	.0
SE	.00046	.00159	.00158	.00059	.00002	.0
SSE	.00069	.00322	.00210	.00069	.00002	.0
S	.00055	.00483	.00301	.00702	.00025	.0
SSW	.00039	.00261	.00508	.00497	.00021	.00002
SW	.00037	.00213	.00153	.00082	.0	.0
WSW	.00063	.00204	.00178	.00107	.0	.0
W	.00078	.00274	.00293	.00290	.00023	.0
WNW	.00040	.00183	.00272	.00295	.00030	.00002
NW	.00044	.00105	.00222	.00197	.00039	.0
NNW	.00047	.00181	.00233	.00293	.00045	.00007

```
             GEORGETOWN SOUTH CAROLINA     UNPAVED ROADS

          METEOROLOGICAL INPUT DATA FOR  ANNUAL

STABILITY CLASS  5
                                    WINDSPEED CLASS
 WIND DIRECTION     1        2        3        4        5        6
      N          .05828   .02109   .00910   .00249   .00016   .00007
      NNE        .02534   .01603   .00993   .00117   .00002   .0
      NE         .01497   .01155   .00595   .00105   .0       .0
      ENE        .00644   .00512   .00399   .00062   .00005   .0
      E          .01493   .01082   .00732   .00087   .00002   .0
      ESE        .00944   .00556   .00224   .00018   .0       .0
      SE         .00801   .00347   .00160   .00027   .0       .0
      SSE        .01036   .00517   .00195   .00037   .00002   .0
      S          .02136   .01257   .00731   .00144   .00007   .0
      SSW        .02715   .01683   .00949   .00162   .00014   .0
      SW         .02829   .01255   .00416   .00023   .00002   .0
      WSW        .02040   .00509   .00242   .00014   .00002   .0
      W          .02554   .01251   .00529   .00080   .00015   .0
      WNW        .01196   .00617   .00398   .00097   .00011   .00002
      NW         .00824   .00459   .00394   .00128   .00014   .0
      NNW        .02321   .00702   .00373   .00135   .00016   .00002
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                    GEORGETOWN SOUTH CAROLINA     UNPAVED ROADS

INPUT REGRESSION PARAMETERS ARE:

    POLLUTANT       ------Y-INTERCEPT-------   --SLOPE-

   PARTICULATES             0.0                1.0000
```

GEORGETOWN SOUTH CAROLINA   UNPAVED ROADS

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	VERT	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	PARTICULATES
1	653.0	3689.0	0.	45.
2	653.0	3690.0	0.	45.
3	653.0	3691.0	0.	45.
4	653.0	3692.0	0.	42.
5	653.0	3693.0	0.	44.
6	653.0	3694.0	0.	52.
7	653.0	3695.0	0.	53.
8	653.0	3696.0	0.	51.
9	653.0	3697.0	0.	51.
10	653.0	3698.0	0.	49.
11	654.0	3689.0	0.	45.
12	654.0	3690.0	0.	47.
13	654.0	3691.0	0.	45.
14	654.0	3692.0	0.	44.
15	654.0	3693.0	0.	46.
16	654.0	3694.0	0.	53.
17	654.0	3695.0	0.	54.
18	654.0	3696.0	0.	52.
19	654.0	3697.0	0.	54.
20	654.0	3698.0	0.	51.
21	655.0	3689.0	0.	44.
22	655.0	3690.0	0.	45.
23	655.0	3691.0	0.	46.
24	655.0	3692.0	0.	45.
25	655.0	3693.0	0.	44.
26	655.0	3694.0	0.	52.
27	655.0	3695.0	0.	52.
28	655.0	3696.0	0.	53.
29	655.0	3697.0	0.	53.
30	655.0	3698.0	0.	52.
31	656.0	3689.0	0.	45.
32	656.0	3690.0	0.	46.
33	656.0	3691.0	0.	40.
34	656.0	3692.0	0.	45.
35	656.0	3693.0	0.	41.
36	656.0	3694.0	0.	44.
37	656.0	3695.0	0.	51.
38	656.0	3696.0	0.	51.
39	656.0	3697.0	0.	50.
40	656.0	3698.0	0.	43.

GEORGETOWN SOUTH CAROLINA   UNPAVED ROADS

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS)		EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER)	
	HORIZ	VERT	SO2	PARTICULATES
41	657.0	3689.0	0.	44.
42	657.0	3690.0	0.	43.
43	657.0	3691.0	0.	46.
44	657.0	3692.0	0.	44.
45	657.0	3693.0	0.	43.
46	657.0	3694.0	0.	40.
47	657.0	3695.0	0.	39.
48	657.0	3696.0	0.	43.
49	657.0	3697.0	0.	42.
50	657.0	3698.0	0.	42.
51	658.0	3689.0	0.	43.
52	658.0	3690.0	0.	44.
53	658.0	3691.0	0.	44.
54	658.0	3692.0	0.	44.
55	658.0	3693.0	0.	44.
56	658.0	3694.0	0.	42.
57	658.0	3695.0	0.	43.
58	658.0	3696.0	0.	47.
59	658.0	3697.0	0.	49.
60	658.0	3698.0	0.	47.
61	659.0	3689.0	0.	41.
62	659.0	3690.0	0.	41.
63	659.0	3691.0	0.	42.
64	659.0	3692.0	0.	43.
65	659.0	3693.0	0.	43.
66	659.0	3694.0	0.	43.
67	659.0	3695.0	0.	48.
68	659.0	3696.0	0.	49.
69	659.0	3697.0	0.	49.
70	659.0	3698.0	0.	49.
71	660.0	3689.0	0.	40.
72	660.0	3690.0	0.	41.
73	660.0	3691.0	0.	41.
74	660.0	3692.0	0.	41.
75	660.0	3693.0	0.	42.
76	660.0	3694.0	0.	44.
77	660.0	3695.0	0.	49.
78	660.0	3696.0	0.	49.
79	660.0	3697.0	0.	49.
80	660.0	3698.0	0.	48.

GEORGETOWN SOUTH CAROLINA   UNPAVED ROADS

RECEPTOR CONCENTRATION DATA				
RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS)		EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER)	
	HORIZ	VERT	SO2	PARTICULATES
81	661.0	3649.0	0.	39.
82	661.0	3650.0	0.	39.
83	661.0	3651.0	0.	39.
84	661.0	3652.0	0.	40.
85	661.0	3653.0	0.	41.
86	661.0	3654.0	0.	43.
87	661.0	3655.0	0.	45.
88	661.0	3656.0	0.	47.
89	661.0	3657.0	0.	47.
90	661.0	3658.0	0.	47.
91	662.0	3649.0	0.	37.
92	662.0	3650.0	0.	37.
93	662.0	3651.0	0.	38.
94	662.0	3652.0	0.	39.
95	662.0	3653.0	0.	39.
96	662.0	3654.0	0.	39.
97	662.0	3655.0	0.	44.
98	662.0	3656.0	0.	43.
99	662.0	3657.0	0.	45.
100	662.0	3658.0	0.	44.

GEORGETOWN SOUTH CAROLINA   UNPAVED ROADS

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 17	RECEPTOR 19	RECEPTOR 29	RECEPTOR 28	RECEPTOR 7
1	0.69 % 0.3680	0.65 % 0.3658	0.72 % 0.3871	0.72 % 0.3833	0.66 % 0.3496
2	1.31 % 0.7090	1.20 % 0.6415	1.42 % 0.7573	1.44 % 0.7646	1.15 % 0.6060
3	0.32 % 0.1731	0.32 % 0.1738	0.33 % 0.1787	0.33 % 0.1775	0.32 % 0.1674
4	2.38 % 1.2970	2.45 % 1.3152	2.53 % 1.3544	2.52 % 1.3398	2.36 % 1.2483
5	0.47 % 0.2561	0.50 % 0.2672	0.52 % 0.2791	0.51 % 0.2734	0.47 % 0.2483
6	3.15 % 1.7035	3.31 % 1.7761	3.42 % 1.8301	3.37 % 1.7913	3.13 % 1.6517
7	5.18 % 2.5003	5.29 % 2.8350	5.10 % 2.7276	5.15 % 2.7416	5.50 % 2.9050
8	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
9	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
10	1.21 % 0.6514	1.25 % 0.6655	1.12 % 0.5990	1.13 % 0.6022	1.33 % 0.7046
11	0.82 % 0.4434	0.94 % 0.5021	0.90 % 0.4824	0.88 % 0.4681	0.84 % 0.4453
12	1.81 % 0.9755	1.98 % 1.0624	1.93 % 1.0307	1.86 % 0.9913	1.96 % 1.0325
13	1.20 % 0.6457	1.34 % 0.7151	1.29 % 0.6913	1.23 % 0.6569	1.27 % 0.6717
14	2.87 % 1.5495	2.97 % 1.5921	3.03 % 1.6193	3.03 % 1.6115	2.84 % 1.4981
15	9.45 % 5.1058	8.61 % 4.6156	10.51 % 5.6214	10.97 % 5.8363	7.98 % 4.2128
16	4.21 % 2.2765	3.91 % 2.0955	3.75 % 2.0064	3.77 % 2.0054	4.60 % 2.4284
17	45.90 % 24.7456	46.61 % 24.9952	43.80 % 23.4252	42.43 % 22.5724	47.06 % 24.8436
18	4.43 % 2.3935	4.00 % 2.1444	4.18 % 2.2354	4.80 % 2.5534	4.00 % 2.1144
19	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
20	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
21	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0

GEORGETOWN SOUTH CAROLINA   UNPAVED ROADS

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 17	RECEPTOR 19	RECEPTOR 22	RECEPTOR 28	RECEPTOR 7
22	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
23	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
24	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
25	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
26	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
27	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
28	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
29	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
30	1.01 % 0.5477	1.05 % 0.5621	1.09 % 0.5831	1.11 % 0.5897	0.95 % 0.5042
31	2.24 % 1.2097	2.33 % 1.2520	2.42 % 1.2963	2.41 % 1.2912	2.16 % 1.1422
32	0.31 % 0.1700	0.31 % 0.1638	0.31 % 0.1673	0.32 % 0.1723	0.31 % 0.1646
33	0.12 % 0.0659	0.12 % 0.0625	0.13 % 0.0679	0.13 % 0.0697	0.12 % 0.0649
34	3.67 % 1.9847	3.89 % 2.0878	4.14 % 2.2164	4.26 % 2.2667	3.99 % 2.1096
35	3.15 % 1.7047	2.86 % 1.5351	3.19 % 1.7094	3.34 % 1.7779	2.70 % 1.4293
36	1.87 % 1.0119	1.91 % 1.0221	1.87 % 1.0029	1.98 % 0.5391	1.95 % 1.0316
37	0.46 % 0.2473	0.46 % 0.2485	0.48 % 0.2544	0.48 % 0.2571	0.46 % 0.2455
38	1.19 % 0.6451	1.03 % 0.5540	1.17 % 0.6263	1.28 % 0.6802	1.16 % 0.6144
39	0.67 % 0.3643	0.68 % 0.3661	0.66 % 0.3536	0.66 % 0.3527	0.71 % 0.3770
BACK-GROUND	0.0 % 0.	0.0 % 0.	0.0 % 0.	0.0 % 0.	0.0 % 0.
TOTAL	100.0 % 54.0385	100.0 % 53.6332	100.0 % 53.5054	100.0 % 53.2133	100.0 % 52.9113

APPENDIX E

AQDM PAVED ROADS PRINTOUT

The attached computer printout for paved roads only is based on the unrevised emissions. (See Chapter VI of the report.) To account for the revised emissions, concentrations at each receptor should be multiplied by two.

GEORGETOWN SOUTH CAROLINA   PAVED ROADS

SOURCE DATA

SOURCE NUMBER	SOURCE ID.	SOURCE LOCATION (KILOMETERS) HORIZONTAL	VERTICAL	SOURCE AREA SQUARE KILOMETERS	ANNUAL SOURCE EMISSION RATE (TONS/DAY) SO2	PART	STACK DATA HT (FT)	DIAM (FT)	VEL (FPS)	TEMP (DEG.F)
1	11	657.3	3713.4	155.30	0.0	0.039	10.0	0.0	0.0	0.
2	12	665.8	3703.9	91.90	0.0	0.014	10.0	0.0	0.0	0.
3	21	663.8	3720.1	102.40	0.0	0.023	10.0	0.0	0.0	0.
4	22	656.0	3713.5	115.50	0.0	0.054	10.0	0.0	0.0	0.
5	30	655.7	3727.4	39.10	0.0	0.013	10.0	0.0	0.0	0.
6	40	653.2	3733.1	95.90	0.0	0.039	10.0	0.0	0.0	0.
7	50	650.4	3722.5	107.30	0.0	0.041	10.0	0.0	0.0	0.
8	60	634.1	3701.5	2.50	0.0	0.035	10.0	0.0	0.0	0.
9	70	632.7	3702.0	2.60	0.0	0.020	10.0	0.0	0.0	0.
10	81	642.1	3709.4	89.10	0.0	0.070	10.0	0.0	0.0	0.
11	82	636.6	3703.0	24.50	0.0	0.039	10.0	0.0	0.0	0.
12	91	644.3	3696.5	57.20	0.0	0.090	10.0	0.0	0.0	0.
13	92	635.6	3698.5	46.60	0.0	0.077	10.0	0.0	0.0	0.
14	101	655.1	3705.2	65.30	0.0	0.044	10.0	0.0	0.0	0.
15	102	660.3	3701.5	27.40	0.0	0.061	10.0	0.0	0.0	0.
16	111	647.8	3704.0	166.50	0.0	0.015	10.0	0.0	0.0	0.
17	112	653.6	3695.9	27.60	0.0	0.094	10.0	0.0	0.0	0.
18	120	660.2	3696.8	28.10	0.0	0.057	10.0	0.0	0.0	0.
19	130	659.4	3694.7	1.50	0.0	0.047	10.0	0.0	0.0	0.
20	140	658.9	3694.0	0.50	0.0	0.022	10.0	0.0	0.0	0.
21	150	657.5	3695.0	1.30	0.0	0.035	10.0	0.0	0.0	0.
22	160	656.9	3693.9	2.50	0.0	0.005	10.0	0.0	0.0	0.
23	170	656.4	3693.3	0.90	0.0	0.021	10.0	0.0	0.0	0.
24	180	659.3	3693.3	0.90	0.0	0.049	10.0	0.0	0.0	0.
25	190	650.3	3692.7	0.90	0.0	0.011	10.0	0.0	0.0	0.
26	200	660.9	3693.2	0.20	0.0	0.003	10.0	0.0	0.0	0.
27	210	659.3	3691.5	3.10	0.0	0.027	10.0	0.0	0.0	0.
28	220	655.1	3695.2	3.60	0.0	0.054	10.0	0.0	0.0	0.
29	230	650.2	3710.4	23.50	0.0	0.098	10.0	0.0	0.0	0.
30	240	677.0	3710.4	52.30	0.0	0.162	10.0	0.0	0.0	0.
31	250	665.1	3699.7	22.90	0.0	0.128	10.0	0.0	0.0	0.
32	261	670.2	3695.5	51.40	0.0	0.123	10.0	0.0	0.0	0.
33	262	665.2	3698.1	69.10	0.0	0.0	10.0	0.0	0.0	0.
34	271	649.9	3687.2	118.20	0.0	0.049	10.0	0.0	0.0	0.
35	272	655.3	3695.2	34.30	0.0	0.073	10.0	0.0	0.0	0.
36	290	635.2	3692.0	113.90	0.0	0.070	10.0	0.0	0.0	0.
37	291	655.6	3680.0	224.10	0.0	0.039	10.0	0.0	0.0	0.
38	292	657.3	3684.4	11.20	0.0	0.009	10.0	0.0	0.0	0.
39	293	638.3	3693.0	169.60	0.0	0.061	10.0	0.0	0.0	0.

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                    GEORGETOWN SOUTH CAROLINA     PAVED ROADS

              METEOROLOGICAL INPUT DATA FOR  ANNUAL


MIXING DEPTH = 1300. METERS
AMBIENT TEMPERATURE =   65. DEGREES,FAHRENHEIT
AMBIENT PRESSURE = 1013. MILLIBARS

STABILITY CLASS  1
                                          WINDSPEED CLASS

 WIND DIRECTION       1        2        3         4         5         6

     N             .00045   .00041    .0        .0        .0        .0
     NNE           .00012   .00025    .0        .0        .0        .0
     NE            .00003   .00005    .0        .0        .0        .0
     ENE           .00010   .00014    .0        .0        .0        .0
     E             .00039   .00078    .0        .0        .0        .0
     ESE           .00031   .00054    .0        .0        .0        .0
     SE            .00026   .00043    .0        .0        .0        .0
     SSE           .00029   .00101    .0        .0        .0        .0
     S             .00036   .00059    .0        .0        .0        .0
     SSW           .00014   .00019    .0        .0        .0        .0
     SW            .00030   .00023    .0        .0        .0        .0
     WSW           .00053   .00034    .0        .0        .0        .0
     W             .00080   .00055    .0        .0        .0        .0
     WNW           .00031   .00030    .0        .0        .0        .0
     NW            .00023   .00027    .0        .0        .0        .0
     NNW           .00034   .00030    .0        .0        .0        .0
```

GEORGETOWN SOUTH CAROLINA   PAVED ROADS

METEOROLOGICAL INPUT DATA FOR ANNUAL

STABILITY CLASS 2

WIND DIRECTION	WINDSPEED CLASS 1	2	3	4	5	6
N	.00507	.00254	.00101	.0	.0	.0
NNE	.00239	.00178	.00103	.0	.0	.0
NE	.00202	.00156	.00062	.0	.0	.0
ENE	.00131	.00114	.00075	.0	.0	.0
E	.00271	.00392	.00233	.0	.0	.0
ESE	.00239	.00435	.00261	.0	.0	.0
SE	.00191	.00365	.00224	.0	.0	.0
SSE	.00222	.00448	.00325	.0	.0	.0
S	.00246	.00457	.00524	.0	.0	.0
SSW	.00140	.00129	.00052	.0	.0	.0
SW	.00130	.00103	.00046	.0	.0	.0
WSW	.00217	.00178	.00119	.0	.0	.0
W	.00393	.00350	.00191	.0	.0	.0
WNW	.00195	.00213	.00089	.0	.0	.0
NW	.00110	.00135	.00062	.0	.0	.0
NNW	.00271	.00112	.00052	.0	.0	.0

GEORGETOWN SOUTH CAROLINA   PAVED ROADS

METEOROLOGICAL INPUT DATA FOR ANNUAL

STABILITY CLASS 3

	WINDSPEED CLASS					
WIND DIRECTION	1	2	3	4	5	6
N	.00237	.00407	.00627	.00046	.0	.0
NNE	.00132	.00293	.00392	.00034	.0	.0
NE	.00100	.00255	.00268	.00005	.0	.0
ENE	.00076	.00213	.00272	.00019	.0	.0
E	.00119	.00352	.00856	.00080	.0	.0
ESE	.00113	.00361	.00549	.00023	.0	.0
SE	.00103	.00305	.00364	.00023	.0	.0
SSE	.00103	.00400	.00533	.00039	.0	.0
S	.00168	.00452	.01578	.00329	.00007	.0
SSW	.00080	.00201	.00501	.00071	.00002	.0
SW	.00092	.00158	.00174	.00007	.0	.0
WSW	.00057	.00215	.00242	.00018	.0	.0
W	.00129	.00412	.00478	.00039	.0	.0
WNW	.00055	.00256	.00241	.00013	.00002	.0
NW	.00075	.00159	.00225	.00015	.0	.0
NNW	.00112	.00152	.00254	.00043	.0	.0

GEORGETOWN SOUTH CAROLINA   PAVED ROADS

METEOROLOGICAL INPUT DATA FOR ANNUAL

STABILITY CLASS 4

	WINDSPEED CLASS					
WIND DIRECTION	1	2	3	4	5	6
N	.00155	.00521	.00743	.00572	.00053	.0
NNE	.00107	.00419	.00542	.00247	.00016	.0
NE	.00095	.00373	.00359	.00103	.00007	.0
ENE	.00094	.00290	.00361	.00056	.00005	.00002
E	.00109	.00464	.00583	.00210	.0	.0
ESE	.00057	.00255	.00226	.00052	.00002	.0
SE	.00046	.00153	.00158	.00069	.00002	.0
SSE	.00069	.00322	.00210	.00069	.00002	.0
S	.00065	.00483	.00301	.00702	.00025	.0
SSW	.00039	.00261	.00509	.00487	.00021	.00002
SW	.00037	.00213	.00153	.00092	.0	.0
WSW	.00063	.00204	.00178	.00107	.0	.0
W	.00079	.00274	.00292	.00290	.00023	.0
WNW	.00040	.00185	.00222	.00295	.00030	.00002
NW	.00044	.00105	.00222	.00197	.00039	.0
NNW	.00047	.00151	.00233	.00292	.00046	.00007

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                 GEORGETOWN SOUTH CAROLINA     PAVED ROADS

              METEOROLOGICAL INPUT DATA FOR  ANNUAL

STABILITY CLASS  5
                                        WINDSPEED CLASS

 WIND DIRECTION        1        2        3        4        5        5

        N           .05929   .02109   .00310   .00249   .00016   .00007

        NNE         .02534   .01503   .00983   .00117   .00002   .0

        NE          .01487   .01155   .00586   .00105   .0       .0

        ENE         .00844   .00512   .00389   .00062   .00005   .0

        E           .01493   .01082   .00732   .00097   .00002   .0

        ESE         .00744   .00556   .00224   .00018   .0       .0

        SE          .00901   .00347   .00160   .00027   .0       .0

        SSE         .01038   .00517   .00196   .00037   .00002   .0

        S           .02136   .01257   .00731   .00144   .00007   .0

        SSW         .02715   .01593   .00949   .00152   .00014   .0

        SW          .02929   .01255   .00416   .00023   .00002   .0

        WSW         .02040   .00909   .00242   .00014   .00002   .0

        W           .02454   .01251   .00629   .00090   .00016   .0

        WNW         .01196   .00617   .00398   .00087   .00011   .00002

        NW          .00924   .00439   .00394   .00128   .00014   .0

        NNW         .02321   .00702   .00373   .00185   .00016   .00002
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                    GEORGETOWN SOUTH CAROLINA     PAVED ROADS

INPUT REGRESSION PARAMETERS ARE:

    POLLUTANT       -------Y-INTERCEPT-------    --SLOPE-

   PARTICULATES              0.0                  1.0000
```

GEORGETOWN SOUTH CAROLINA   PAVED ROADS

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS)		EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER)	
	HORIZ	VERT	SO2	PARTICULATES
1	653.0	3689.0	0.	1.
2	653.0	3690.0	0.	1.
3	653.0	3691.0	0.	1.
4	653.0	3692.0	0.	1.
5	653.0	3693.0	0.	1.
6	653.0	3694.0	0.	1.
7	653.0	3695.0	0.	1.
8	653.0	3696.0	0.	1.
9	653.0	3697.0	0.	1.
10	653.0	3698.0	0.	1.
11	654.0	3689.0	0.	1.
12	654.0	3690.0	0.	1.
13	654.0	3691.0	0.	1.
14	654.0	3692.0	0.	1.
15	654.0	3693.0	0.	1.
16	654.0	3694.0	0.	1.
17	654.0	3695.0	0.	1.
18	654.0	3696.0	0.	1.
19	654.0	3697.0	0.	1.
20	654.0	3698.0	0.	1.
21	655.0	3689.0	0.	1.
22	655.0	3690.0	0.	1.
23	655.0	3691.0	0.	1.
24	655.0	3692.0	0.	1.
25	655.0	3693.0	0.	1.
26	655.0	3694.0	0.	1.
27	655.0	3695.0	0.	1.
28	655.0	3696.0	0.	1.
29	655.0	3697.0	0.	1.
30	655.0	3698.0	0.	1.
31	656.0	3689.0	0.	2.
32	656.0	3690.0	0.	2.
33	656.0	3691.0	0.	2.
34	656.0	3692.0	0.	2.
35	656.0	3693.0	0.	2.
36	656.0	3694.0	0.	2.
37	656.0	3695.0	0.	2.
38	656.0	3696.0	0.	2.
39	656.0	3697.0	0.	1.
40	656.0	3698.0	0.	1.

GEORGETOWN SOUTH CAROLINA   PAVED ROADS

RECEPTOR CONCENTRATIONS DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	VERT	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	PARTICULATES
41	657.0	3689.0	0.	2.
42	657.0	3690.0	0.	2.
43	657.0	3691.0	0.	2.
44	657.0	3692.0	0.	2.
45	657.0	3693.0	0.	2.
46	657.0	3694.0	0.	2.
47	657.0	3695.0	0.	2.
48	657.0	3696.0	0.	2.
49	657.0	3697.0	0.	1.
50	657.0	3698.0	0.	1.
51	658.0	3689.0	0.	3.
52	658.0	3690.0	0.	3.
53	658.0	3691.0	0.	2.
54	658.0	3692.0	0.	3.
55	658.0	3693.0	0.	3.
56	658.0	3694.0	0.	3.
57	658.0	3695.0	0.	3.
58	658.0	3696.0	0.	2.
59	658.0	3697.0	0.	2.
60	658.0	3698.0	0.	2.
61	659.0	3689.0	0.	3.
62	659.0	3690.0	0.	3.
63	659.0	3691.0	0.	3.
64	659.0	3692.0	0.	4.
65	659.0	3693.0	0.	5.
66	659.0	3694.0	0.	6.
67	659.0	3695.0	0.	4.
68	659.0	3696.0	0.	2.
69	659.0	3697.0	0.	2.
70	659.0	3698.0	0.	2.
71	660.0	3689.0	0.	2.
72	660.0	3690.0	0.	2.
73	660.0	3691.0	0.	3.
74	660.0	3692.0	0.	3.
75	660.0	3693.0	0.	3.
76	660.0	3694.0	0.	4.
77	660.0	3695.0	0.	3.
78	660.0	3696.0	0.	2.
79	660.0	3697.0	0.	2.
80	660.0	3698.0	0.	2.

GEORGETOWN SOUTH CAROLINA   PAVED ROADS

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	VERT	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	PARTICULATES
81	661.0	3689.0	0.	2.
82	661.0	3690.0	0.	2.
83	661.0	3691.0	0.	2.
84	661.0	3692.0	0.	2.
85	661.0	3693.0	0.	3.
86	661.0	3694.0	0.	2.
87	661.0	3695.0	0.	2.
88	661.0	3696.0	0.	2.
89	661.0	3697.0	0.	2.
90	661.0	3698.0	0.	2.
91	662.0	3689.0	0.	1.
92	662.0	3690.0	0.	1.
93	662.0	3691.0	0.	1.
94	662.0	3692.0	0.	2.
95	662.0	3693.0	0.	2.
96	662.0	3694.0	0.	2.
97	662.0	3695.0	0.	2.
98	662.0	3696.0	0.	2.
99	662.0	3697.0	0.	2.
100	662.0	3698.0	0.	2.

```
GEORGETOWN SOUTH CAROLINA      PAVED ROADS

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM  RECEPTORS

ANNUAL    PARTICULATES

MICROGRAMS PER CUBIC METER


-----------------------------------------------------------------------------------------------
| SOURCE     |   RECEPTOR   |   RECEPTOR   |   RECEPTOR    |   RECEPTOR   |   PECEPTOR   |
|------------|     66       |     65       |     67        |     64       |     76       |
|     1      |   0.34 %     |   0.39 %     |   0.51 %      |   0.56 %     |   0.60 %     |
|------------|   0.0205     |   0.0205     |   0.0204      |   0.0203     |   0.0211     |
|     2      |   0.15 %     |   0.19 %     |   0.24 %      |   0.27 %     |   0.30 %     |
|------------|   0.0058     |   0.0051     |   0.0099      |   0.0096     |   0.0105     |
|     3      |   0.25 %     |   0.29 %     |   0.38 %      |   0.40 %     |   0.44 %     |
|------------|   0.0152     |   0.0148     |   0.0152      |   0.0145     |   0.0156     |
|     4      |   0.59 %     |   0.67 %     |   0.88 %      |   0.97 %     |   0.96 %     |
|------------|   0.0359     |   0.0352     |   0.0356      |   0.0350     |   0.0340     |
|     5      |   0.15 %     |   0.17 %     |   0.23 %      |   0.23 %     |   0.26 %     |
|------------|   0.0085     |   0.0081     |   0.0092      |   0.0095     |   0.0090     |
|     6      |   0.31 %     |   0.35 %     |   0.49 %      |   0.51 %     |   0.51 %     |
|------------|   0.0190     |   0.0186     |   0.0194      |   0.0193     |   0.0192     |
|     7      |   0.34 %     |   0.38 %     |   0.51 %      |   0.54 %     |   0.55 %     |
|------------|   0.0203     |   0.0195     |   0.0209      |   0.0195     |   0.0196     |
|     8      |   0.18 %     |   0.19 %     |   0.29 %      |   0.25 %     |   0.30 %     |
|------------|   0.0108     |   0.0100     |   0.0117      |   0.0092     |   0.0107     |
|     9      |   0.11 %     |   0.10 %     |   0.15 %      |   0.14 %     |   0.16 %     |
|------------|   0.0055     |   0.0054     |   0.0063      |   0.0049     |   0.0057     |
|    10      |   0.32 %     |   0.35 %     |   0.43 %      |   0.50 %     |   0.53 %     |
|------------|   0.0192     |   0.0184     |   0.0159      |   0.0190     |   0.0193     |
|    11      |   0.21 %     |   0.22 %     |   0.32 %      |   0.28 %     |   0.34 %     |
|------------|   0.0125     |   0.0115     |   0.0129      |   0.0103     |   0.0121     |
|    12      |   0.75 %     |   0.82 %     |   1.19 %      |   1.12 %     |   1.27 %     |
|------------|   0.0454     |   0.0431     |   0.0476      |   0.0407     |   0.0447     |
|    13      |   0.47 %     |   0.51 %     |   0.75 %      |   0.71 %     |   0.79 %     |
|------------|   0.0285     |   0.0263     |   0.0302      |   0.0256     |   0.0274     |
|    14      |   0.62 %     |   0.70 %     |   0.94 %      |   1.00 %     |   0.99 %     |
|------------|   0.0374     |   0.0365     |   0.0390      |   0.0363     |   0.0351     |
|    15      |   1.55 %     |   1.74 %     |   2.41 %      |   2.49 %     |   2.83 %     |
|------------|   0.0940     |   0.0916     |   0.0977      |   0.0996     |   0.1000     |
|    16      |   0.12 %     |   0.13 %     |   0.17 %      |   0.19 %     |   0.19 %     |
|------------|   0.0076     |   0.0070     |   0.0069      |   0.0069     |   0.0064     |
|    17      |   1.44 %     |   1.75 %     |   2.49 %      |   2.47 %     |   2.33 %     |
|------------|   0.0867     |   0.0926     |   0.1002      |   0.0900     |   0.0822     |
|    18      |   1.55 %     |   1.64 %     |   3.73 %      |   2.52 %     |   3.15 %     |
|------------|   0.0936     |   0.0864     |   0.1508      |   0.0916     |   0.1114     |
|    19      |  11.25 %     |   7.41 %     |  37.58 %      |   8.41 %     |  15.13 %     |
|------------|   0.6815     |   0.3941     |   1.5365      |   0.3043     |   0.5352     |
|    20      |  43.51 %     |  12.28 %     |  11.37 %      |   6.75 %     |  11.09 %     |
|------------|   2.6564     |   0.6472     |   0.4599      |   0.2447     |   0.3921     |
|    21      |   3.95 %     |   2.68 %     |   7.59 %      |   4.02 %     |   3.15 %     |
|------------|   0.2394     |   0.1411     |   0.3072      |   0.1457     |   0.1112     |
```

E.12

```
GEORGETOWN SOUTH CAROLINA      PAVED ROADS

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM  RECEPTORS

ANNUAL   PARTICULATES

MICROGRAMS PER CUBIC METER


| SOURCE    | RECEPTOR  | RECEPTOR  | RECEPTOR  | RECEPTOR  | RECEPTOR  |
|___________|____66_____|____65_____|____67_____|____64_____|____76_____|
|    22     |   0.32 %  |   0.29 %  |   0.50 %  |   0.36 %  |   0.44 %  |
|___________|___0.0191__|___0.0152__|___0.0201__|___0.0129__|___0.0156__|
|    23     |   7.45 %  |   6.09 %  |   3.70 %  |   8.19 %  |   4.11 %  |
|___________|___0.4500__|___0.3205__|___0.1497__|___0.2966__|___0.1453__|
|    24     |  12.45 %  |  46.08 %  |   7.58 %  |  23.75 %  |  26.86 %  |
|___________|___0.7517__|___2.4262__|___0.3066__|___0.8599__|___0.9493__|
|    25     |   0.59 %  |   1.57 %  |   0.75 %  |   2.58 %  |   3.23 %  |
|___________|___0.0355__|___0.0825__|___0.0306__|___0.0933__|___0.1141__|
|    26     |   0.21 %  |   0.29 %  |   0.18 %  |   0.26 %  |   0.85 %  |
|___________|___0.0127__|___0.0155__|___0.0071__|___0.0094__|___0.0300__|
|    27     |   1.40 %  |   2.00 %  |   1.72 %  |  14.38 %  |   2.93 %  |
|___________|___0.0845__|___0.1056__|___0.0699__|___0.5204__|___0.0992__|
|    28     |   2.23 %  |   2.91 %  |   2.74 %  |   5.05 %  |   4.09 %  |
|___________|___0.1346__|___0.1532__|___0.1107__|___0.1830__|___0.1446__|
|    29     |   0.40 %  |   0.49 %  |   0.55 %  |   0.75 %  |   0.75 %  |
|___________|___0.0239__|___0.0256__|___0.0221__|___0.0271__|___0.0263__|
|    30     |   0.93 %  |   1.01 %  |   1.34 %  |   1.58 %  |   1.70 %  |
|___________|___0.0559__|___0.0532__|___0.0544__|___0.0574__|___0.0602__|
|    31     |   1.16 %  |   1.35 %  |   1.73 %  |   1.99 %  |   2.14 %  |
|___________|___0.0701__|___0.0712__|___0.0700__|___0.0720__|___0.0757__|
|    32     |   0.89 %  |   1.02 %  |   1.37 %  |   1.55 %  |   1.60 %  |
|___________|___0.0535__|___0.0535__|___0.0555__|___0.0563__|___0.0564__|
|    33     |   0.0  %  |   0.0  %  |   0.0  %  |   0.0  %  |   0.0  %  |
|___________|___0.0_____|___0.0_____|___0.0_____|___0.0_____|___0.0_____|
|    34     |   0.50 %  |   0.58 %  |   0.75 %  |   0.81 %  |   0.83 %  |
|___________|___0.0303__|___0.0303__|___0.0302__|___0.0293__|___0.0292__|
|    35     |   1.50 %  |   1.74 %  |   2.13 %  |   2.18 %  |   2.48 %  |
|___________|___0.0906__|___0.0915__|___0.0862__|___0.0790__|___0.0877__|
|    36     |   0.46 %  |   0.52 %  |   0.69 %  |   0.75 %  |   0.77 %  |
|___________|___0.0277__|___0.0275__|___0.0280__|___0.0273__|___0.0272__|
|    37     |   0.27 %  |   0.30 %  |   0.40 %  |   0.45 %  |   0.46 %  |
|___________|___0.0162__|___0.0160__|___0.0160__|___0.0161__|___0.0162__|
|    38     |   0.18 %  |   0.23 %  |   0.24 %  |   0.36 %  |   0.33 %  |
|___________|___0.0110__|___0.0123__|___0.0098__|___0.0130__|___0.0115__|
|    39     |   0.41 %  |   0.47 %  |   0.60 %  |   0.69 %  |   0.68 %  |
|___________|___0.0245__|___0.0245__|___0.0243__|___0.0251__|___0.0240__|
|   BACK-   |   0.0  %  |   0.0  %  |   0.0  %  |   0.0  %  |   0.0  %  |
|__GROUND___|___0.______|___0.______|___0.______|___0.______|___0.______|
|   TOTAL   |  100.0 %  |  100.0 %  |  100.0 %  |  100.0 %  |  100.0 %  |
|___________|___6.0365__|___5.2655__|___4.0475__|___3.6207__|___3.5349__|
```

APPENDIX F

AQDM AREA SOURCES PRINTOUT

The attached computer printout for all area sources is based on the unrevised emissions for paved and unpaved roads. (See Chapter VI of the report.) To account for the revised emissions, concentrations at each receptor should be increased by the values in Appendix E and reduced by half the values in Appendix D.

```
                    GEORGETOWN SOUTH CAROLINA     AREA SOURCES

SOURCE DATA
 ------------------------------------------------------------------------------------------------------------------------
|                          |                        |                |      ANNUAL SOURCE       |      STACK DATA            |
| SOURCE                   |    SOURCE LOCATION     | SOURCE AREA    |      EMISSION RATE       |                            |
| NUMBER    SOURCE ID.     |     (KILOMETERS)       |   SQUARE       |       (TONS/DAY)         |  HT   DIAM    VEL    TEMP  |
|                          | HORIZONTAL | VERTICAL  | KILOMETERS     |   SO2          PART      | (FT)  (FT)   (FPS)  (DEG.F)|
|    1               11    |   657.3    |  3712.4   |    166.30      |   0.0          1.328     | 10.0  0.0    0.0      0.   |
|    2               12    |   665.8    |  3703.9   |     51.90      |   0.0          1.755     | 10.0  0.0    0.0      0.   |
|    3               21    |   663.8    |  3720.1   |    102.40      |   0.0          0.593     | 10.0  0.0    0.0      0.   |
|    4               22    |   656.0    |  3713.5   |    118.50      |   0.0          2.056     | 10.0  0.0    0.0      0.   |
|    5               30    |   655.7    |  3727.4   |     39.10      |   0.0          0.587     | 10.0  0.0    0.0      0.   |
|    6               40    |   655.2    |  3733.1   |     85.90      |   0.0          3.154     | 10.0  0.0    0.0      0.   |
|    7               50    |   650.4    |  3722.5   |    107.30      |   0.0          4.514     | 10.0  0.0    0.0      0.   |
|    8               60    |   634.1    |  3701.5   |      2.50      |   0.0          0.045     | 10.0  0.0    0.0      0.   |
|    9               70    |   632.7    |  3702.0   |      2.60      |   0.0          0.026     | 10.0  0.0    0.0      0.   |
|   10               81    |   642.1    |  3708.4   |     89.10      |   0.0          1.973     | 10.0  0.0    0.0      0.   |
|   11               82    |   636.6    |  3703.0   |     24.50      |   0.0          1.212     | 10.0  0.0    0.0      0.   |
|   12               91    |   644.3    |  3695.5   |     57.20      |   0.0          1.547     | 10.0  0.0    0.0      0.   |
|   13               92    |   635.6    |  3698.5   |     46.60      |   0.0          1.493     | 10.0  0.0    0.0      0.   |
|   14              101    |   655.1    |  3705.2   |     65.30      |   0.0          1.507     | 10.0  0.0    0.0      0.   |
|   15              102    |   660.3    |  3701.5   |     27.40      |   0.0          5.575     | 10.0  0.0    0.0      0.   |
|   16              111    |   647.8    |  3704.0   |    105.50      |   0.0          3.754     | 10.0  0.0    0.0      0.   |
|   17              112    |   653.6    |  3695.9   |     27.60      |   0.0          8.810     | 10.0  0.0    0.0      0.   |
|   18              120    |   660.2    |  3696.8   |     28.10      |   0.0          3.159     | 10.0  0.0    0.0      0.   |
|   19              130    |   655.4    |  3694.7   |      1.50      |   0.0          0.059     | 10.0  0.0    0.0      0.   |
|   20              140    |   658.9    |  3694.0   |      0.50      |   0.0          0.033     | 10.0  0.0    0.0      0.   |
|   21              150    |   657.5    |  3695.0   |      1.30      |   0.0          0.048     | 10.0  0.0    0.0      0.   |
|   22              160    |   656.9    |  3693.9   |      2.50      |   0.0          0.008     | 10.0  0.0    0.0      0.   |
|   23              170    |   658.4    |  3693.3   |      0.80      |   0.0          0.027     | 10.0  0.0    0.0      0.   |
|   24              180    |   655.3    |  3693.3   |      0.90      |   0.0          0.021     | 10.0  0.0    0.0      0.   |
|   25              190    |   660.3    |  3692.7   |      0.90      |   0.0          0.014     | 10.0  0.0    0.0      0.   |
|   26              200    |   660.9    |  3693.2   |      0.20      |   0.0          0.004     | 10.0  0.0    0.0      0.   |
|   27              210    |   655.3    |  3691.5   |      3.10      |   0.0          0.036     | 10.0  0.0    0.0      0.   |
|   28              220    |   658.1    |  3685.2   |      3.60      |   0.0          0.069     | 10.0  0.0    0.0      0.   |
|   29              230    |   660.2    |  3710.4   |     23.50      |   0.0          0.123     | 10.0  0.0    0.0      0.   |
|   30              240    |   637.0    |  3710.5   |     52.30      |   0.0          2.679     | 10.0  0.0    0.0      0.   |
|   31              250    |   669.1    |  3695.7   |     32.90      |   0.0          3.162     | 10.0  0.0    0.0      0.   |
|   32              261    |   670.2    |  3695.5   |     51.40      |   0.0          0.688     | 10.0  0.0    0.0      0.   |
|   33              262    |   665.2    |  3689.1   |     65.10      |   0.0          0.310     | 10.0  0.0    0.0      0.   |
|   34              271    |   648.0    |  3687.2   |    118.20      |   0.0          3.746     | 10.0  0.0    0.0      0.   |
|   35              272    |   655.3    |  3695.2   |     34.30      |   0.0          2.030     | 10.0  0.0    0.0      0.   |
|   36              280    |   635.2    |  3692.0   |    113.90      |   0.0          2.542     | 10.0  0.0    0.0      0.   |
|   37              291    |   655.6    |  3680.0   |    224.10      |   0.0          0.971     | 10.0  0.0    0.0      0.   |
|   38              292    |   657.3    |  3684.4   |     11.20      |   0.0          1.004     | 10.0  0.0    0.0      0.   |
|   39              293    |   628.3    |  3682.0   |    169.60      |   0.0          1.009     | 10.0  0.0    0.0      0.   |
                    GEORGETOWN SOUTH CAROLINA     AREA SOURCES

               METEOROLOGICAL INPUT DATA FOR  ANNUAL


MIXING DEPTH = 1300. METERS
AMBIENT TEMPERATURE =    65. DEGREES,FAHRENHEIT
AMBIENT PRESSURE = 1013. MILLIBARS

STABILITY CLASS  1
                                      WINDSPEED CLASS

 WIND DIRECTION          1         2        3        4        5        6

     N                .00046    .00041    .0       .0       .0       .0

     NNE              .00012    .00025    .0       .0       .0       .0

     NE               .00003    .00005    .0       .0       .0       .0

     ENE              .00010    .00014    .0       .0       .0       .0

     E                .00039    .00079    .0       .0       .0       .0

     ESE              .00031    .00054    .0       .0       .0       .0

     SE               .00026    .00043    .0       .0       .0       .0

     SSE              .00029    .00101    .0       .0       .0       .0

     S                .00036    .00059    .0       .0       .0       .0

     SSW              .00014    .00019    .0       .0       .0       .0

     SW               .00030    .00023    .0       .0       .0       .0

     WSW              .00053    .00034    .0       .0       .0       .0

     W                .00090    .00055    .0       .0       .0       .0

     WNW              .00031    .00030    .0       .0       .0       .0

     NW               .00023    .00027    .0       .0       .0       .0

     NNW              .00034    .00030    .0       .0       .0       .0
```

```
                GEORGETOWN SOUTH CAROLINA      AREA SOURCES

          METEOROLOGICAL INPUT DATA FOR  ANNUAL

STABILITY CLASS  2
                                       WINDSPEED CLASS
 WIND DIRECTION        1        2        3        4        5        6
        N           .00507   .00254   .00101     .0       .0       .0
        NNE         .00239   .00178   .00103     .0       .0       .0
        NE          .00202   .00156   .00062     .0       .0       .0
        ENE         .00131   .00114   .00075     .0       .0       .0
        E           .00271   .00382   .00233     .0       .0       .0
        ESE         .00238   .00435   .00261     .0       .0       .0
        SE          .00191   .00385   .00224     .0       .0       .0
        SSE         .00222   .00448   .00325     .0       .0       .0
        S           .00246   .00457   .00524     .0       .0       .0
        SSW         .00140   .00128   .00052     .0       .0       .0
        SW          .00130   .00103   .00046     .0       .0       .0
        WSW         .00217   .00179   .00119     .0       .0       .0
        W           .00393   .00380   .00181     .0       .0       .0
        WNW         .00195   .00213   .00089     .0       .0       .0
        NW          .00110   .00135   .00052     .0       .0       .0
        NNW         .00271   .00112   .00062     .0       .0       .0
```

```
                    GEORGETOWN SOUTH CAROLINA     AREA SOURCES

                 METEOROLOGICAL INPUT DATA FOR  ANNUAL

STABILITY CLASS  3
                                        WINDSPEED CLASS
 WIND DIRECTION        1        2        3        4        5         6
      N             .00237   .00407   .00527   .00045   .0        .0
      NNE           .00132   .00253   .00382   .00034   .0        .0
      NE            .00100   .00259   .00268   .00005   .0        .0
      ENE           .00076   .00213   .00272   .00018   .0        .0
      E             .00119   .00352   .00959   .00090   .0        .0
      ESE           .00113   .00351   .00549   .00023   .0        .0
      SE            .00103   .00306   .00364   .00023   .0        .0
      SSE           .00103   .00400   .00523   .00039   .0        .0
      S             .00168   .00452   .01578   .00329   .00007    .0
      SSW           .00090   .00201   .00501   .00071   .00002    .0
      SW            .00092   .00158   .00174   .00007   .0        .0
      WSW           .00067   .00215   .00242   .00018   .0        .0
      W             .00129   .00412   .00478   .00039   .0        .0
      WNW           .00055   .00256   .00341   .00019   .00002    .0
      NW            .00075   .00199   .00226   .00016   .0        .0
      NNW           .00112   .00152   .00254   .00043   .0        .0
```

```
                   GEORGETOWN SOUTH CAROLINA     AREA SOURCES

              METEOROLOGICAL INPUT DATA FOR  ANNUAL

STABILITY CLASS  4
                                        WINDSPEED CLASS
  WIND DIRECTION      1        2        3        4        5        6
       N           .00165   .00521   .00743   .00572   .00053   .0
       NNE         .00107   .00419   .00542   .00247   .00016   .0
       NE          .00095   .00373   .00359   .00103   .00007   .0
       ENE         .00094   .00250   .00361   .00096   .00005   .00002
       E           .00109   .00454   .00593   .00210   .0       .0
       ESE         .00067   .00259   .00226   .00062   .00002   .0
       SE          .00045   .00159   .00158   .00069   .00002   .0
       SSE         .00069   .00322   .00210   .00065   .00002   .0
       S           .00065   .00483   .00901   .00702   .00025   .0
       SSW         .00039   .00251   .00509   .00497   .00021   .00002
       SW          .00037   .00213   .00153   .00092   .0       .0
       WSW         .00053   .00204   .00178   .00107   .0       .0
       W           .00078   .00274   .00293   .00290   .00023   .0
       WNW         .00040   .00185   .00222   .00295   .00030   .00002
       NW          .00044   .00105   .00222   .00137   .00039   .0
       NNW         .00047   .00181   .00233   .00293   .00046   .00007
```

GEORGETOWN SOUTH CAROLINA   AREA SOURCES

METEOROLOGICAL INPUT DATA FOR ANNUAL

STABILITY CLASS 5

WIND DIRECTION	WINDSPEED CLASS 1	2	3	4	5	6
N	.05828	.02109	.00910	.00249	.00015	.00007
NNE	.02534	.01603	.00883	.00117	.00002	.0
NE	.01487	.01155	.00596	.00105	.0	.0
ENE	.00844	.00512	.00389	.00062	.00005	.0
E	.01493	.01082	.00732	.00097	.00002	.0
ESE	.00944	.00555	.00224	.00018	.0	.0
SE	.00901	.00347	.00160	.00027	.0	.0
SSE	.01038	.00517	.00196	.00037	.00002	.0
S	.02136	.01257	.00731	.00144	.00007	.0
SSW	.02715	.01683	.00949	.00162	.00014	.0
SW	.02929	.01255	.00415	.00023	.00002	.0
WSW	.02040	.00508	.00242	.00014	.00002	.0
W	.02654	.01251	.00623	.00090	.00016	.0
WNW	.01186	.00617	.00398	.00097	.00011	.00002
NW	.00924	.00458	.00394	.00128	.00014	.0
NNW	.02321	.00702	.00373	.00195	.00015	.00002

```
                         GEORGETOWN SOUTH CAROLINA     AREA SOURCES

INPUT REGRESSION PARAMETERS ARE:

     POLLUTANT          __Y-INTERCEPT_______    __SLOPE_

    PARTICULATES              0.0              1.0000
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GEORGETOWN SOUTH CAROLINA     AREA SOURCES

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|                                                                       |
|__________________RECEPTOR CONCENTRATION DATA__________________________|
|           |                           |                               |
| RECEPTOR  |    RECEPTOR LOCATION      |   EXPECTED ARITHMETIC MEAN    |
|__NUMBER___|___________________________|_______________________________|
|           |      (KILOMETERS)         |   (MICROGRAMS/CU. METER)      |
|___________|___HORIZ________VERT_______|_______SO2________PARTICULATES_|
|           |            |              |                |              |
|     1     |    653.0   |   3649.0     |      0.        |     49.      |
|     2     |    653.0   |   3650.0     |      0.        |     49.      |
|_____3_____|____653.0___|___3651.0_____|______0.________|_____48.______|
|     4     |    653.0   |   3652.0     |      0.        |     45.      |
|     5     |    653.0   |   3653.0     |      0.        |     47.      |
|_____6_____|____653.0___|___3654.0_____|______0.________|_____55.______|
|     7     |    653.0   |   3655.0     |      0.        |     56.      |
|     8     |    653.0   |   3656.0     |      0.        |     54.      |
|_____9_____|____653.0___|___3657.0_____|______0.________|_____55.______|
|    10     |    653.0   |   3658.0     |      0.        |     52.      |
|    11     |    654.0   |   3649.0     |      0.        |     50.      |
|____12_____|____654.0___|___3650.0_____|______0.________|_____50.______|
|    13     |    654.0   |   3651.0     |      0.        |     49.      |
|    14     |    654.0   |   3652.0     |      0.        |     47.      |
|____15_____|____654.0___|___3653.0_____|______0.________|_____49.______|
|    16     |    654.0   |   3654.0     |      0.        |     56.      |
|    17     |    654.0   |   3655.0     |      0.        |     57.      |
|____18_____|____654.0___|___3656.0_____|______0.________|_____55.______|
|    19     |    654.0   |   3657.0     |      0.        |     57.      |
|    20     |    654.0   |   3658.0     |      0.        |     54.      |
|____21_____|____655.0___|___3649.0_____|______0.________|_____49.______|
|    22     |    655.0   |   3650.0     |      0.        |     50.      |
|    23     |    655.0   |   3651.0     |      0.        |     49.      |
|____24_____|____655.0___|___3652.0_____|______0.________|_____49.______|
|    25     |    655.0   |   3653.0     |      0.        |     48.      |
|    26     |    655.0   |   3654.0     |      0.        |     56.      |
|____27_____|____655.0___|___3655.0_____|______0.________|_____56.______|
|    28     |    655.0   |   3656.0     |      0.        |     57.      |
|    29     |    655.0   |   3657.0     |      0.        |     57.      |
|____30_____|____655.0___|___3658.0_____|______0.________|_____55.______|
|    31     |    656.0   |   3649.0     |      0.        |     49.      |
|    32     |    656.0   |   3650.0     |      0.        |     49.      |
|____33_____|____656.0___|___3651.0_____|______0.________|_____50.______|
|    34     |    656.0   |   3652.0     |      0.        |     49.      |
|    35     |    656.0   |   3653.0     |      0.        |     45.      |
|____36_____|____656.0___|___3654.0_____|______0.________|_____48.______|
|    37     |    656.0   |   3655.0     |      0.        |     54.      |
|    38     |    656.0   |   3656.0     |      0.        |     55.      |
|____39_____|____656.0___|___3657.0_____|______0.________|_____53.______|
|____40_____|____656.0___|___3658.0_____|______0.________|_____49.______|
```

GEORGETOWN SOUTH CAROLINA   AREA SOURCES

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ.	RECEPTOR LOCATION (KILOMETERS) VERT.	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) PARTICULATES
41	657.0	3689.0	0.	49.
42	657.0	3690.0	0.	49.
43	657.0	3691.0	0.	50.
44	657.0	3692.0	0.	49.
45	657.0	3693.0	0.	49.
46	657.0	3694.0	0.	45.
47	657.0	3695.0	0.	44.
48	657.0	3696.0	0.	47.
49	657.0	3697.0	0.	45.
50	657.0	3698.0	0.	46.
51	658.0	3689.0	0.	49.
52	658.0	3690.0	0.	49.
53	658.0	3691.0	0.	49.
54	658.0	3692.0	0.	49.
55	658.0	3693.0	0.	50.
56	658.0	3694.0	0.	49.
57	658.0	3695.0	0.	49.
58	658.0	3696.0	0.	52.
59	658.0	3697.0	0.	52.
60	658.0	3698.0	0.	50.
61	659.0	3689.0	0.	46.
62	659.0	3690.0	0.	45.
63	659.0	3691.0	0.	47.
64	659.0	3692.0	0.	49.
65	659.0	3693.0	0.	53.
66	659.0	3694.0	0.	54.
67	659.0	3695.0	0.	55.
68	659.0	3696.0	0.	53.
69	659.0	3697.0	0.	53.
70	659.0	3698.0	0.	52.
71	660.0	3689.0	0.	44.
72	660.0	3690.0	0.	45.
73	660.0	3691.0	0.	45.
74	660.0	3692.0	0.	47.
75	660.0	3693.0	0.	49.
76	660.0	3694.0	0.	51.
77	660.0	3695.0	0.	54.
78	660.0	3696.0	0.	54.
79	660.0	3697.0	0.	52.
80	660.0	3698.0	0.	52.

GEORGETOWN SOUTH CAROLINA AREA SOURCES

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	VERT	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	PARTICULATES
81	661.0	3649.0	0.	42.
82	661.0	3650.0	0.	42.
83	661.0	3651.0	0.	43.
84	661.0	3652.0	0.	45.
85	661.0	3653.0	0.	46.
86	661.0	3654.0	0.	48.
87	661.0	3655.0	0.	51.
88	661.0	3656.0	0.	52.
89	661.0	3657.0	0.	51.
90	661.0	3658.0	0.	51.
91	662.0	3649.0	0.	40.
92	662.0	3650.0	0.	41.
93	662.0	3651.0	0.	42.
94	662.0	3652.0	0.	43.
95	662.0	3653.0	0.	43.
96	662.0	3654.0	0.	43.
97	662.0	3655.0	0.	48.
98	662.0	3656.0	0.	49.
99	662.0	3657.0	0.	49.
100	662.0	3658.0	0.	47.

GEORGETOWN SOUTH CAROLINA AREA SOURCES

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 17	RECEPTOR 15	RECEPTOR 29	RECEPTOR 28	RECEPTOR 16
1	0.54 %	0.55 %	1.00 %	0.99 %	0.97 %
	0.5282	0.5468	0.5562	0.5505	0.5435
2	1.35 %	1.23 %	1.46 %	1.48 %	1.43 %
	0.7737	0.7010	0.8275	0.8335	0.8025
3	0.68 %	0.63 %	0.71 %	0.71 %	0.69 %
	0.3927	0.3546	0.4054	0.4029	0.3897
4	2.57 %	2.65 %	2.73 %	2.71 %	2.59 %
	1.4725	1.5045	1.5456	1.5330	1.4557
5	0.57 %	0.60 %	0.63 %	0.62 %	0.58 %
	0.3297	0.3435	0.3601	0.3513	0.3230
6	3.12 %	3.28 %	3.38 %	3.33 %	3.13 %
	1.7904	1.8663	1.9224	1.8825	1.7544
7	5.09 %	5.20 %	5.01 %	5.05 %	5.09 %
	2.9155	2.9561	2.8441	2.8597	2.8535
8	0.03 %	0.04 %	0.03 %	0.03 %	0.03 %
	0.0167	0.0155	0.0193	0.0179	0.0154
9	0.02 %	0.02 %	0.02 %	0.02 %	0.01 %
	0.0050	0.0105	0.0103	0.0095	0.0092
10	1.30 %	1.35 %	1.20 %	1.22 %	1.31 %
	0.7445	0.7651	0.6845	0.6992	0.7373
11	0.81 %	0.93 %	0.89 %	0.87 %	0.73 %
	0.4661	0.5254	0.5071	0.4921	0.4123
12	1.89 %	2.06 %	2.00 %	1.93 %	1.81 %
	1.0901	1.1712	1.1362	1.0929	1.0150
13	1.24 %	1.40 %	1.34 %	1.29 %	1.19 %
	0.7126	0.7536	0.7628	0.7249	0.6530
14	2.93 %	3.04 %	3.10 %	3.09 %	2.93 %
	1.6841	1.7255	1.7534	1.7509	1.6439
15	9.04 %	8.25 %	10.05 %	10.48 %	9.15 %
	5.1886	4.6504	5.7125	5.9310	5.1329
16	4.24 %	3.94 %	3.77 %	3.79 %	4.31 %
	2.4323	2.2422	2.1435	2.1425	2.4175
17	43.75 %	44.61 %	41.84 %	40.48 %	43.26 %
	25.1104	25.3633	23.7737	22.9052	24.2743
18	4.27 %	3.86 %	4.03 %	4.62 %	4.40 %
	2.4512	2.1558	2.2891	2.6147	2.4712
19	0.15 %	0.12 %	0.12 %	0.15 %	0.14 %
	0.0860	0.0666	0.0702	0.0874	0.0755
20	0.09 %	0.05 %	0.06 %	0.08 %	0.11 %
	0.0465	0.0235	0.0316	0.0435	0.0503
21	0.19 %	0.12 %	0.14 %	0.19 %	0.17 %
	0.1042	0.0301	0.0818	0.1055	0.0951

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GEORGETOWN SOUTH CAROLINA   AREA SOURCES

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL   PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 17	RECEPTOR 19	RECEPTOR 29	RECEPTOR 28	RECEPTOR 15
22	0.03 % 0.0152	0.02 % 0.0100	0.02 % 0.0138	0.03 % 0.0157	0.03 % 0.0173
23	0.07 % 0.0397	0.04 % 0.0230	0.05 % 0.0292	0.06 % 0.0317	0.08 % 0.0430
24	0.19 % 0.1091	0.11 % 0.0643	0.14 % 0.0808	0.15 % 0.0837	0.22 % 0.1225
25	0.02 % 0.0135	0.01 % 0.0085	0.02 % 0.0092	0.02 % 0.0105	0.03 % 0.0149
26	0.01 % 0.0038	0.00 % 0.0025	0.00 % 0.0028	0.01 % 0.0031	0.01 % 0.0044
27	0.05 % 0.0280	0.04 % 0.0248	0.04 % 0.0250	0.05 % 0.0305	0.07 % 0.0375
28	0.09 % 0.0464	0.08 % 0.0468	0.11 % 0.0613	0.11 % 0.0647	0.10 % 0.0553
29	0.04 % 0.0227	0.04 % 0.0252	0.05 % 0.0257	0.04 % 0.0241	0.04 % 0.0229
30	1.04 % 0.5962	1.08 % 0.6135	1.12 % 0.6369	1.14 % 0.6441	1.09 % 0.6093
31	2.25 % 1.2908	2.35 % 1.3365	2.44 % 1.3938	2.42 % 1.3677	2.32 % 1.2992
32	0.44 % 0.2521	0.43 % 0.2425	0.44 % 0.2480	0.45 % 0.2555	0.45 % 0.2519
33	0.17 % 0.0955	0.16 % 0.0905	0.17 % 0.0983	0.18 % 0.0995	0.18 % 0.1013
34	3.74 % 2.1468	3.97 % 2.2584	4.22 % 2.3975	4.33 % 2.4517	3.79 % 2.1235
35	3.23 % 1.8525	2.93 % 1.6682	3.27 % 1.8566	3.41 % 1.9320	2.99 % 1.6759
36	1.96 % 1.1231	2.00 % 1.1346	1.96 % 1.1132	1.96 % 1.1072	2.00 % 1.1231
37	0.53 % 0.3051	0.54 % 0.3065	0.55 % 0.3138	0.56 % 0.3172	0.55 % 0.3059
38	1.15 % 0.6607	1.00 % 0.5670	1.13 % 0.6410	1.23 % 0.6952	1.27 % 0.7142
39	0.80 % 0.4566	0.81 % 0.4588	0.78 % 0.4432	0.78 % 0.4421	0.81 % 0.4549
BACK-GROUND	0.0 % 0.	0.0 % 0.	0.0 % 0.	0.0 % 0.	0.0 % 0.
TOTAL	100.0 % 57.4085	100.0 % 56.8665	100.0 % 56.8386	100.0 % 56.6691	100.0 % 56.1327

APPENDIX G

AQDM 1980 PROJECTION ANALYSIS PRINTOUT

GEORGETOWN COUNTY, SOUTH CAROLINA PROJECTIONS 1980 POINT/AREA SOURCES

SOURCE DATA

SOURCE NUMBER	SOURCE ID.	SOURCE LOCATION (KILOMETERS) HORIZONTAL	SOURCE LOCATION (KILOMETERS) VERTICAL	SOURCE AREA SQUARE KILOMETERS	ANNUAL SOURCE EMISSION RATE (TONS/DAY) SO2	ANNUAL SOURCE EMISSION RATE (TONS/DAY) PART	STACK DATA HT (FT)	STACK DATA DIAM (FT)	STACK DATA VEL (FPS)	STACK DATA TEMP (DEG.F)
1	11	667.3	3713.4	166.30	0.0	0.910	10.0	0.0	0.0	0.
2	12	665.8	3703.9	91.90	0.0	0.966	10.0	0.0	0.0	0.
3	21	663.8	3720.1	102.40	0.0	0.554	10.0	0.0	0.0	0.
4	22	656.0	3713.5	118.50	0.0	1.208	10.0	0.0	0.0	0.
5	30	659.7	3727.4	39.10	0.0	0.371	10.0	0.0	0.0	0.
6	40	655.2	3733.1	85.90	0.0	1.690	10.0	0.0	0.0	0.
7	50	650.4	3722.5	107.30	0.0	2.440	10.0	0.0	0.0	0.
8	60	634.1	3701.5	2.50	0.0	0.073	10.0	0.0	0.0	0.
9	70	632.7	3702.0	2.60	0.0	0.042	10.0	0.0	0.0	0.
10	81	642.1	3708.4	89.10	0.0	1.120	10.0	0.0	0.0	0.
11	82	636.6	3703.0	24.50	0.0	0.675	10.0	0.0	0.0	0.
12	91	644.3	3696.5	57.20	0.0	0.986	10.0	0.0	0.0	0.
13	92	635.6	3698.5	46.60	0.0	0.898	10.0	0.0	0.0	0.
14	101	655.1	3705.2	65.30	0.0	0.910	10.0	0.0	0.0	0.
15	102	660.3	3701.5	27.40	0.0	2.888	10.0	0.0	0.0	0.
16	111	647.8	3704.0	106.50	0.0	2.018	10.0	0.0	0.0	0.
17	112	653.6	3695.9	27.60	0.0	4.555	10.0	0.0	0.0	0.
18	121	660.2	3696.8	28.10	0.0	1.669	10.0	0.0	0.0	0.
19	130	655.4	3694.7	1.50	0.0	0.098	10.0	0.0	0.0	0.
20	140	658.9	3694.0	0.50	0.0	0.051	10.0	0.0	0.0	0.
21	150	657.6	3695.0	1.90	0.0	0.078	10.0	0.0	0.0	0.
22	160	656.9	3693.9	2.50	0.0	0.012	10.0	0.0	0.0	0.
23	170	658.4	3693.3	0.80	0.0	0.044	10.0	0.0	0.0	0.
24	180	655.3	3693.3	0.90	0.0	0.107	10.0	0.0	0.0	0.
25	190	660.3	3692.7	0.80	0.0	0.023	10.0	0.0	0.0	0.
26	200	660.9	3693.2	0.20	0.0	0.007	10.0	0.0	0.0	0.
27	210	659.1	3691.5	3.10	0.0	0.059	10.0	0.0	0.0	0.
28	220	658.1	3685.2	3.60	0.0	0.113	10.0	0.0	0.0	0.
29	230	680.2	3710.4	23.50	0.0	0.311	10.0	0.0	0.0	0.
30	240	677.0	3710.4	52.30	0.0	1.745	10.0	0.0	0.0	0.
31	250	669.1	3699.7	32.90	0.0	1.903	10.0	0.0	0.0	0.
32	261	670.2	3695.5	51.40	0.0	0.682	10.0	0.0	0.0	0.
33	262	665.2	3688.1	68.10	0.0	0.293	10.0	0.0	0.0	0.
34	271	648.8	3687.2	118.20	0.0	2.061	10.0	0.0	0.0	0.
35	272	655.3	3685.2	34.30	0.0	1.156	10.0	0.0	0.0	0.
36	280	635.2	3692.0	113.90	0.0	1.403	10.0	0.0	0.0	0.
37	291	655.6	3680.0	224.10	0.0	0.555	10.0	0.0	0.0	0.
38	292	657.3	3684.4	11.20	0.0	0.528	10.0	0.0	0.0	0.
39	293	638.3	3683.0	168.60	0.0	0.665	10.0	0.0	0.0	0.
40	1140 1 1 2	630.0	3700.1	0.0	0.0	0.033	42.0	1.0	33.0	200.
41	1140 2 1	658.5	3692.6	0.0	2.055	0.444	250.0	11.3	50.0	180.
42	1140 2 2	658.5	3692.6	0.0	2.055	0.901	250.0	11.3	50.0	180.
43	1140 2 3	658.5	3692.6	0.0	0.0	0.274	250.0	4.5	21.0	165.
44	1140 2 4	658.5	3692.6	0.0	0.0	0.356	250.0	4.5	21.0	165.
45	1140 2 5	658.5	3692.6	0.0	0.0	0.186	100.0	2.0	25.0	165.
46	1140 2 6 7	658.5	3692.6	0.0	0.0	0.586	100.0	6.1	43.2	180.
47	1140 2 8	658.5	3692.6	0.0	3.838	0.293	70.0	6.5	40.0	600.
48	1140 2 914	658.5	3692.6	0.0	19.449	6.162	250.0	16.0	40.0	500.
49	1140 21516	658.5	3692.6	0.0	7.677	0.586	90.0	8.0	50.0	600.
50	1140 3 1	659.1	3693.3	0.0	0.0	0.068	80.0	2.3	11.9	80.
51	1140 3 2	659.1	3693.3	0.0	0.0	0.055	28.0	2.0	36.0	80.
52	1140 3 3	659.1	3693.3	0.0	0.0	0.068	33.0	2.5	36.0	80.
53	1140 3 4	659.1	3693.3	0.0	0.003	0.052	183.0	9.9	44.0	900.

54	1140	4	1 3	658.9	3653.4	0.0	0.0	0.025	80.0	4.6	2.0	215.
55	1140	4	4	658.9	3693.4	0.0	0.0	0.364	120.0	31.3	8.0	90.
56	1140	4	6	658.9	3693.4	0.0	0.159	0.019	80.0	4.0	60.0	500.
57	1140	4	7	658.9	3693.4	0.0	0.003	0.033	40.0	0.0	0.0	600.
58	1140	4	8	658.9	3653.6	0.0	0.0	0.110	40.0	0.0	0.0	80.
59	1140	5	1	653.5	3689.4	0.0	36.932	1.515	400.0	20.0	42.2	300.
60	1140	5	1	644.1	3656.1	0.0	0.014	0.047	40.0	3.0	50.0	400.
61	1140	5	2	658.9	3693.0	0.0	0.0	0.184	49.0	4.0	8.9	200.

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GEORGETOWN COUNTY, SOUTH CAROLINA  PROJECTIONS 1980  POINT/AREA SOURCES

RECEPTOR DATA

LOCATIONS TO BE USED AS RECEPTORS IN ADDITION TO THE 100 RECTANGULAR GRID LOCATIONS

 RECEPTOR      X-COORDINATE       Y-COORDINATE
 _NUMBER_      (KILOMETERS)       (KILOMETERS)

   101             659.1             3694.0
   102             658.4             3693.2
   103             658.6             3692.8
   104             659.4             3693.3
   105             659.0             3692.4
   106             685.0             3715.0
   107             680.0             3715.0
   108             676.5             3705.0
   109             674.0             3700.0
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                    GEORGETOWN COUNTY, SOUTH CAROLINA  PROJECTIONS 1980  POINT/AREA SOURCES

              METECROLOGICAL INPUT DATA FOR  ANNUAL


MIXING DEPTH = 1300. METERS
AMBIENT TEMPERATURE =    65. DEGREES,FAHRENHEIT
AMBIENT PRESSURE = 1013. MILLIBARS

STABILITY CLASS  1
                                         WINDSPEED CLASS

 WIND DIRECTICN        1        2        3       4       5       6

      N             .00046   .00041   .0      .0      .0      .0

      NNE           .00012   .00025   .0      .0      .0      .0

      NE            .00003   .00005   .0      .0      .0      .0

      ENE           .00010   .00014   .0      .0      .0      .0

      E             .00039   .00078   .0      .0      .0      .0

      ESE           .00031   .00064   .0      .0      .0      .0

      SE            .00026   .00043   .0      .0      .0      .0

      SSE           .00029   .00101   .0      .0      .0      .0

      S             .00036   .00059   .0      .0      .0      .0

      SSW           .00014   .00018   .0      .0      .0      .0

      SW            .00030   .00023   .0      .0      .0      .0

      WSW           .00053   .00034   .0      .0      .0      .0

      W             .00080   .00055   .0      .0      .0      .0

      WNW           .00031   .00030   .0      .0      .0      .0

      NW            .00023   .00027   .0      .0      .0      .0

      NNW           .00034   .00030   .0      .0      .0      .0
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          GEORGETOWN COUNTY, SOUTH CAROLINA  PROJECTIONS 1980  POINT/AREA SOURCES

        METEOROLOGICAL  INPUT DATA FOR  ANNUAL

STABILITY CLASS  2
                                  WINDSPEED CLASS
 WIND DIRECTION      1        2        3        4       5       6
      N            .00507   .00254   .00101   .0      .0      .0
      NNE          .00239   .00178   .00103   .0      .0      .0
      NE           .00202   .00156   .00062   .0      .0      .0
      ENE          .00131   .00114   .00075   .0      .0      .0
      E            .00271   .00382   .00233   .0      .0      .0
      ESE          .00238   .00435   .00261   .0      .0      .0
      SE           .00191   .00386   .00224   .0      .0      .0
      SSE          .00222   .00448   .00325   .0      .0      .0
      S            .00246   .00457   .00524   .0      .0      .0
      SSW          .00140   .00128   .00062   .0      .0      .0
      SW           .00130   .00103   .00046   .0      .0      .0
      WSW          .00217   .00178   .00119   .0      .0      .0
      W            .00393   .00380   .00181   .0      .0      .0
      WNW          .00195   .00213   .00089   .0      .0      .0
      NW           .00110   .00135   .00062   .0      .0      .0
      NNW          .00271   .00112   .00062   .0      .0      .0
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                    GEORGETOWN COUNTY, SOUTH CAROLINA  PROJECTIONS 1980  POINT/AREA SOURCES

             METEOROLOGICAL INPUT DATA FOR  ANNUAL

STABILITY CLASS  3
                                          WINDSPEED CLASS
 WIND DIRECTION      1        2        3        4        5        6
       N          .00237   .00407   .00627   .00046   .0       .0
       NNE        .00132   .00293   .00382   .00034   .0       .0
       NE         .00100   .00258   .00268   .00005   .0       .0
       ENE        .00076   .00213   .00272   .00018   .0       .0
       E          .00119   .00352   .00858   .00080   .0       .0
       ESE        .00113   .00361   .00549   .00023   .0       .0
       SE         .00103   .00306   .00364   .00023   .0       .0
       SSE        .00103   .00400   .00533   .00039   .0       .0
       S          .00168   .00492   .01578   .00329   .00007   .0
       SSW        .00080   .00201   .00501   .00071   .00002   .0
       SW         .00092   .00158   .00174   .00007   .0       .0
       WSW        .00067   .00215   .00242   .00018   .0       .0
       W          .00129   .00412   .00478   .00039   .0       .0
       WNW        .00055   .00256   .00341   .00018   .00002   .0
       NW         .00075   .00199   .00226   .00016   .0       .0
       NNW        .00112   .00192   .00254   .00043   .0       .0
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GEORGETOWN COUNTY, SOUTH CAROLINA  PROJECTIONS 1980  POINT/AREA SOURCES

METEOROLOGICAL INPUT DATA FOR  ANNUAL

STABILITY CLASS  4
                                    WINDSPEED CLASS
  WIND DIRECTION        1        2        3        4        5        6
        N            .00165   .00521   .00743   .00572   .00053   .0
        NNE          .00107   .00419   .00542   .00247   .00016   .0
        NE           .00095   .00373   .00359   .00103   .00037   .0
        ENE          .00094   .00290   .00361   .00096   .00005   .00002
        E            .00109   .00464   .00583   .00210   .0       .0
        ESE          .00067   .00288   .00226   .00062   .00002   .0
        SE           .00046   .00199   .00158   .00069   .00002   .0
        SSE          .00069   .00322   .00210   .00069   .00002   .0
        S            .00065   .00483   .00901   .00702   .00025   .0
        SSW          .00039   .00261   .00508   .00487   .00021   .00002
        SW           .00037   .00213   .00153   .00082   .0       .0
        WSW          .00063   .00204   .00178   .00107   .0       .0
        W            .00078   .00274   .00293   .00290   .00023   .0
        WNW          .00040   .00185   .00222   .00295   .00030   .00002
        NW           .00044   .00105   .00222   .00197   .00039   .0
        NNW          .00047   .00181   .00233   .00293   .00046   .00007
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                    GEORGETOWN COUNTY, SOUTH CAROLINA  PROJECTIONS 1980  POINT/AREA SOURCES

               METECROLOGICAL INPUT DATA FOR  ANNUAL

STABILITY CLASS  5
                                              WINDSPEED CLASS
 WIND DIRECTION        1         2         3         4         5         6
      N             .05828    .02109    .00910    .00249    .00016    .00007
      NNE           .02534    .01603    .00883    .00117    .00002    .0
      NE            .01487    .01155    .00586    .00105    .0        .0
      ENE           .00844    .00512    .00389    .00062    .00005    .0
      E             .01483    .01082    .00732    .00087    .00002    .0
      ESE           .00944    .00556    .00224    .00018    .0        .0
      SE            .00801    .00347    .00160    .00027    .0        .0
      SSF           .01038    .00517    .00196    .00037    .00002    .0
      S             .02136    .01297    .00731    .00144    .00007    .0
      SSW           .02715    .01683    .00949    .00162    .00014    .0
      SW            .02829    .01255    .00416    .00023    .00002    .0
      WSW           .02040    .00908    .00242    .00014    .00002    .0
      W             .02654    .01251    .00629    .00080    .00016    .0
      WNW           .01186    .00617    .00398    .00087    .00011    .00002
      NW            .00824    .00498    .00394    .00128    .00014    .0
      NNW           .02321    .00702    .00373    .00185    .00016    .00002
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                    GEORGETOWN COUNTY, SOUTH CAROLINA  PROJECTIONS 1980  POINT/AREA SOURCES

INPUT REGRESSION PARAMETERS ARE:

    POLLUTANT__   ______Y-INTERCEPT_______   __SLOPE_

    PARTICULATES             0.0                1.0000
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GEORGETOWN COUNTY, SOUTH CAROLINA PROJECTIONS 1980 POINT/AREA SOURCES

RECEPTOR CONCENTRATION DATA				
RECEPTOR NUMBER	RECEPTOR LOCATION		EXPECTED ARITHMETIC MEAN	
	(KILOMETERS)		(MICROGRAMS/CU. METER)	
	HORIZ	VERT	SO2	PARTICULATES
1	653.0	3689.0	0.	48.
2	653.0	3690.0	0.	48.
3	653.0	3691.0	0.	48.
4	653.0	3692.0	0.	47.
5	653.0	3693.0	0.	48.
6	653.0	3694.0	0.	52.
7	653.0	3695.0	0.	52.
8	653.0	3696.0	0.	51.
9	653.0	3697.0	0.	51.
10	653.0	3698.0	0.	50.
11	654.0	3689.0	0.	49.
12	654.0	3690.0	0.	49.
13	654.0	3691.0	0.	49.
14	654.0	3692.0	0.	48.
15	654.0	3693.0	0.	49.
16	654.0	3694.0	0.	53.
17	654.0	3695.0	0.	53.
18	654.0	3696.0	0.	52.
19	654.0	3697.0	0.	52.
20	654.0	3698.0	0.	51.
21	655.0	3689.0	0.	49.
22	655.0	3690.0	0.	49.
23	655.0	3691.0	0.	49.
24	655.0	3692.0	0.	49.
25	655.0	3693.0	0.	49.
26	655.0	3694.0	0.	53.
27	655.0	3695.0	0.	52.
28	655.0	3696.0	0.	52.
29	655.0	3697.0	0.	52.
30	655.0	3698.0	0.	51.
31	656.0	3689.0	0.	50.
32	656.0	3690.0	0.	50.
33	656.0	3691.0	0.	50.
34	656.0	3692.0	0.	50.
35	656.0	3693.0	0.	49.
36	656.0	3694.0	0.	50.
37	656.0	3695.0	0.	52.
38	656.0	3696.0	0.	52.
39	656.0	3697.0	0.	51.
40	656.0	3698.0	0.	48.

GEORGETOWN COUNTY, SOUTH CAROLINA PROJECTIONS 1980 POINT/AREA SOURCES

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	RECEPTOR LOCATION (KILOMETERS) VERT	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) PARTICULATES
41	657.0	3689.0	0.	51.
42	657.0	3690.0	0.	51.
43	657.0	3691.0	0.	52.
44	657.0	3692.0	0.	51.
45	657.0	3693.0	0.	52.
46	657.0	3694.0	0.	50.
47	657.0	3695.0	0.	49.
48	657.0	3696.0	0.	49.
49	657.0	3697.0	0.	47.
50	657.0	3698.0	0.	47.
51	658.0	3689.0	0.	53.
52	658.0	3690.0	0.	54.
53	658.0	3691.0	0.	54.
54	658.0	3692.0	0.	54.
55	658.0	3693.0	0.	57.
56	658.C	3694.0	0.	55.
57	658.0	3695.0	0.	54.
58	658.0	3696.0	0.	53.
59	658.0	3697.0	0.	52.
60	658.0	3698.0	0.	51.
61	659.0	3689.0	0.	52.
62	659.0	3690.0	0.	54.
63	659.0	3691.0	0.	58.
64	659.0	3692.0	0.	65.
65	659.0	3693.0	0.	89.
66	659.0	3694.0	0.	85.
67	659.0	3695.0	0.	62.
68	659.0	3696.0	0.	56.
69	659.0	3697.0	0.	53.
70	659.0	3698.0	0.	52.
71	66C.0	3689.0	0.	49.
72	660.0	3690.0	0.	50.
73	660.0	3691.0	0.	51.
74	660.0	3692.0	0.	53.
75	660.0	3693.0	0.	58.
76	660.0	3694.0	0.	60.
77	660.0	3695.0	0.	59.
78	660.0	3696.0	0.	55.
79	660.0	3697.0	0.	53.
80	66C.0	3698.0	0.	52.

GEORGETOWN COUNTY, SOUTH CAROLINA PROJECTIONS 1980 POINT/AREA SOURCES

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	RECEPTOR LOCATION (KILOMETERS) VERT	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) PARTICULATES
81	651.0	3689.0	0.	46.
82	661.0	3690.0	0.	47.
83	661.0	3691.0	0.	47.
84	661.0	3692.0	0.	49.
85	661.0	3693.0	0.	53.
86	661.0	3694.0	0.	52.
87	661.0	3695.0	0.	53.
88	661.0	3696.0	0.	53.
89	661.0	3697.0	0.	52.
90	661.0	3698.0	0.	51.
91	662.0	3689.0	0.	44.
92	662.0	3690.0	0.	45.
93	662.0	3691.0	0.	45.
94	662.0	3692.0	0.	47.
95	662.0	3693.0	0.	49.
96	662.0	3694.0	0.	48.
97	662.0	3695.0	0.	50.
98	662.0	3696.0	0.	50.
99	662.0	3697.0	0.	50.
100	662.0	3698.0	0.	49.
101	659.1	3694.0	0.	83.
102	658.4	3693.2	0.	67.
103	658.6	3692.8	0.	66.
104	659.4	3693.3	0.	80.
105	659.0	3692.4	0.	72.
106	695.0	3715.0	0.	33.
107	680.0	3715.0	0.	34.
108	676.5	3705.0	0.	38.
109	674.0	3700.0	0.	38.

GEORGETOWN COUNTY, SOUTH CAROLINA PROJECTIONS 1980 POINT/AREA SOURCES

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 65	RECEPTOR 66	RECEPTOR 101	RECEPTOR 104	RECEPTOR 105
1	0.55 % 0.4503	0.58 % 0.4911	0.59 % 0.4937	0.62 % 0.4960	0.68 % 0.4873
2	0.75 % 0.6709	0.80 % 0.6750	0.82 % 0.6799	0.86 % 0.6918	0.92 % 0.6595
3	0.40 % 0.3575	0.43 % 0.3670	0.44 % 0.3680	0.45 % 0.3643	0.49 % 0.3520
4	0.88 % 0.7866	0.93 % 0.7911	0.95 % 0.7881	0.97 % 0.7761	1.09 % 0.7837
5	0.28 % 0.2484	0.30 % 0.2546	0.31 % 0.2556	0.32 % 0.2540	0.34 % 0.2447
6	0.93 % 0.8292	1.00 % 0.8447	1.01 % 0.8412	1.02 % 0.8200	1.14 % 0.8201
7	1.33 % 1.1871	1.43 % 1.2108	1.45 % 1.2045	1.46 % 1.1696	1.63 % 1.1725
8	0.02 % 0.0208	0.03 % 0.0226	0.03 % 0.0226	0.03 % 0.0212	0.03 % 0.0195
9	0.01 % 0.0113	0.01 % 0.0122	0.01 % 0.0122	0.01 % 0.0115	0.01 % 0.0107
10	0.33 % 0.2944	0.36 % 0.3067	0.37 % 0.3062	0.37 % 0.2964	0.40 % 0.2868
11	0.23 % 0.2044	0.26 % 0.2220	0.27 % 0.2212	0.26 % 0.2105	0.27 % 0.1914
12	0.53 % 0.4721	0.59 % 0.4972	0.60 % 0.4965	0.59 % 0.4770	0.63 % 0.4565
13	0.35 % 0.3111	0.39 % 0.3322	0.40 % 0.3310	0.39 % 0.3120	0.42 % 0.3008
14	0.86 % 0.7625	0.91 % 0.7737	0.92 % 0.7699	0.94 % 0.7507	1.05 % 0.7554
15	4.87 % 4.3457	5.26 % 4.4512	5.38 % 4.4803	5.59 % 4.4905	5.94 % 4.2797
16	0.99 % 0.8819	1.04 % 0.8795	1.05 % 0.8720	1.06 % 0.8516	1.22 % 0.8773
17	5.03 % 4.4874	4.96 % 4.1995	5.02 % 4.1800	4.97 % 3.9858	6.13 % 4.4162
18	2.84 % 2.5300	3.24 % 2.7419	3.31 % 2.7580	3.17 % 2.5410	3.71 % 2.6732
19	0.92 % 0.8231	1.68 % 1.4210	2.16 % 1.8029	1.72 % 1.3828	0.92 % 0.6652
20	1.68 % 1.5002	7.26 % 6.1442	6.54 % 5.4517	1.74 % 1.3927	1.04 % 0.7502
21	0.32 % 0.2896	0.58 % 0.4893	0.44 % 0.3704	0.30 % 0.2406	0.41 % 0.2960

GEORGETOWN COUNTY, SOUTH CAROLINA PROJECTIONS 1980 POINT/AREA SOURCES

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 65	RECEPTOR 66	RECEPTOR 101	RECEPTOR 104	RECEPTOR 105
22	0.04 % 0.0366	0.05 % 0.0457	0.05 % 0.0449	0.04 % 0.0342	0.04 % 0.0307
23	0.75 % 0.6714	1.11 % 0.9429	1.08 % 0.9021	0.88 % 0.7103	1.12 % 0.8087
24	5.94 % 5.2582	1.94 % 1.6414	1.87 % 1.5544	9.70 % 7.7866	3.34 % 2.4069
25	0.19 % 0.1731	0.10 % 0.0833	0.11 % 0.0900	0.30 % 0.2399	0.28 % 0.1992
26	0.04 % 0.0372	0.03 % 0.0256	0.04 % 0.0319	0.09 % 0.0691	0.04 % 0.0323
27	0.26 % 0.2308	0.22 % 0.1846	0.23 % 0.1921	0.33 % 0.2628	0.74 % 0.5345
28	0.36 % 0.3205	0.33 % 0.2818	0.34 % 0.2842	0.39 % 0.3163	0.49 % 0.3508
29	0.09 % 0.0812	0.09 % 0.0758	0.09 % 0.0767	0.10 % 0.0833	0.12 % 0.0841
30	0.69 % 0.6162	0.71 % 0.6021	0.73 % 0.6066	0.79 % 0.6301	0.87 % 0.6237
31	1.19 % 1.0618	1.23 % 1.0453	1.26 % 1.0531	1.35 % 1.0875	1.48 % 1.0690
32	0.33 % 0.2586	0.35 % 0.2989	0.36 % 0.3001	0.38 % 0.3049	0.43 % 0.3069
33	0.10 % 0.0877	0.10 % 0.0877	0.11 % 0.0882	0.11 % 0.0896	0.12 % 0.0874
34	1.43 % 1.2759	1.50 % 1.2738	1.52 % 1.2695	1.57 % 1.2591	1.68 % 1.2099
35	1.63 % 1.4496	1.69 % 1.4345	1.72 % 1.4323	1.79 % 1.4343	1.99 % 1.4340
36	0.64 % 0.5737	0.68 % 0.5797	0.69 % 0.5785	0.71 % 0.5708	0.79 % 0.5702
37	0.26 % 0.2335	0.28 % 0.2375	0.28 % 0.2312	0.29 % 0.2351	0.33 % 0.2348
38	0.81 % 0.7234	0.76 % 0.6435	0.78 % 0.6468	0.89 % 0.7104	1.03 % 0.7443
39	0.30 % 0.2707	0.32 % 0.2672	0.32 % 0.2667	0.33 % 0.2675	0.38 % 0.2727
40	0.01 % 0.0096	0.01 % 0.0104	0.01 % 0.0104	0.01 % 0.0098	0.01 % 0.0092
41	0.00 % 0.0017	0.02 % 0.0177	0.02 % 0.0148	0.01 % 0.0061	0.00 % 0.0009
42	0.00 % 0.0034	0.04 % 0.0359	0.04 % 0.0301	0.02 % 0.0123	0.00 % 0.0019

GEORGETOWN COUNTY, SOUTH CAROLINA PROJECTIONS 1980 POINT/AREA SOURCES

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 65	RECEPTOR 66	RECEPTOR 101	RECEPTOR 104	RECEPTOR 105
43	0.07 % 0.0600	0.19 % 0.1596	0.17 % 0.1428	0.12 % 0.0935	0.09 % 0.0642
44	0.09 % 0.0779	0.24 % 0.2074	0.22 % 0.1855	0.15 % 0.1214	0.12 % 0.0834
45	0.18 % 0.1570	0.44 % 0.3685	0.42 % 0.3481	0.27 % 0.2177	0.29 % 0.2062
46	0.11 % 0.1024	0.46 % 0.3906	0.42 % 0.3535	0.21 % 0.1648	0.17 % 0.1212
47	0.01 % 0.0054	0.07 % 0.0555	0.06 % 0.0480	0.02 % 0.0181	0.01 % 0.0046
48	0.00 % 0.0001	0.01 % 0.0102	0.01 % 0.0084	0.01 % 0.0090	0.00 % 0.0000
49	0.00 % 0.0022	0.04 % 0.0337	0.03 % 0.0285	0.01 % 0.0092	0.00 % 0.0011
50	2.66 % 2.3717	2.26 % 1.9100	2.82 % 2.3480	3.01 % 2.4165	4.38 % 3.1578
51	7.93 % 7.0753	2.63 % 2.2230	3.29 % 2.7392	8.17 % 6.5592	4.65 % 3.3503
52	5.93 % 5.2520	2.78 % 2.3519	3.48 % 2.9028	6.12 % 4.9153	5.03 % 3.6257
53	0.00 % 0.0000	0.00 % 0.0002	0.00 % 0.0002	0.00 % 0.0000	0.00 % 0.0002
54	0.41 % 0.3687	0.57 % 0.4856	0.53 % 0.4421	0.42 % 0.3357	0.89 % 0.6402
55	0.02 % 0.0138	0.17 % 0.1399	0.10 % 0.0799	0.05 % 0.0377	0.21 % 0.1536
56	0.00 % 0.0008	0.01 % 0.0083	0.01 % 0.0049	0.00 % 0.0022	0.01 % 0.0090
57	6.40 % 5.7063	2.91 % 2.4678	2.77 % 2.3108	3.09 % 2.4783	2.60 % 1.8755
58	14.29 % 12.7396	17.62 % 14.9159	15.66 % 13.0451	4.87 % 3.9071	6.55 % 4.7154
59	0.01 % 0.0087	0.01 % 0.0072	0.01 % 0.0073	0.01 % 0.0085	0.01 % 0.0096
60	0.00 % 0.0043	0.01 % 0.0051	0.01 % 0.0051	0.01 % 0.0045	0.01 % 0.0039
61	0.28 % 0.2533	2.37 % 2.0025	2.33 % 1.9375	1.66 % 1.3334	3.50 % 2.5222
BACK-GROUND	22.43 % 20.	23.62 % 20.	24.00 % 20.	24.92 % 20.	27.77 % 20.
TOTAL	100.0 % 89.1589	100.0 % 84.6857	100.0 % 83.3481	100.0 % 80.2896	100.0 % 72.0554

APPENDIX H

AQDM 1985 PROJECTION ANALYSIS PRINTOUT

GEORGETOWN COUNTY, SOUTH CAROLINA PROJECTIONS 1985 POINT/AREA SOURCES

SOURCE DATA

SOURCE NUMBER	SOURCE ID.	SOURCE LOCATION (KILOMETERS) HORIZONTAL	SOURCE LOCATION (KILOMETERS) VERTICAL	SOURCE AREA SQUARE KILOMETERS	ANNUAL SOURCE EMISSION RATE (TONS/DAY) SO2	ANNUAL SOURCE EMISSION RATE (TONS/DAY) PART	STACK DATA HT (FT)	STACK DATA DIAM (FT)	STACK DATA VEL (FPS)	STACK DATA TEMP (DEG.F)
1	11	657.3	3713.4	106.30	0.0	0.410	10.0	0.0	0.0	0.
2	12	655.9	3703.9	91.90	0.0	0.266	10.0	0.0	0.0	0.
3	21	663.8	3729.1	102.90	0.0	0.554	10.0	0.0	0.0	0.
4	22	655.0	3713.5	118.50	0.0	1.209	10.0	0.0	0.0	0.
5	30	659.7	3727.4	39.10	0.0	0.371	10.0	0.0	0.0	0.
6	40	655.2	3723.1	82.90	0.0	1.520	10.0	0.0	0.0	0.
7	50	650.4	3722.5	107.30	0.0	2.439	10.0	0.0	0.0	0.
8	60	634.1	3701.6	2.50	0.0	0.072	10.0	0.0	0.0	0.
9	70	632.7	3702.9	2.60	0.0	0.042	10.0	0.0	0.0	0.
10	91	642.1	3708.4	89.10	0.0	1.120	10.0	0.0	0.0	0.
11	92	636.5	3713.0	24.50	0.0	0.683	10.0	0.0	0.0	0.
12	93	634.3	3696.5	57.20	0.0	0.397	10.0	0.0	0.0	0.
13	94	635.5	3698.5	46.00	0.0	0.912	10.0	0.0	0.0	0.
14	101	655.1	3705.2	65.30	0.0	0.910	10.0	0.0	0.0	0.
15	102	660.3	3701.5	27.40	0.0	2.835	10.0	0.0	0.0	0.
16	111	647.8	3704.6	106.50	0.0	2.019	10.0	0.0	0.0	0.
17	112	653.6	3695.8	27.50	0.0	4.357	10.0	0.0	0.0	0.
18	120	660.2	3690.8	29.10	0.0	1.676	10.0	0.0	0.0	0.
19	130	659.4	3694.7	1.50	0.0	0.100	10.0	0.0	0.0	0.
20	140	658.9	3694.0	0.50	0.0	0.052	10.0	0.0	0.0	0.
21	150	657.6	3695.0	1.20	0.0	0.080	10.0	0.0	0.0	0.
22	160	656.9	3693.9	2.50	0.0	0.012	10.0	0.0	0.0	0.
23	170	659.4	3693.1	0.90	0.0	0.045	10.0	0.0	0.0	0.
24	180	659.3	3693.3	0.90	0.0	0.102	10.0	0.0	0.0	0.
25	190	660.3	3692.7	0.80	0.0	0.024	10.0	0.0	0.0	0.
26	200	660.9	3693.2	0.20	0.0	0.007	10.0	0.0	0.0	0.
27	210	659.3	3691.5	3.10	0.0	0.062	10.0	0.0	0.0	0.
28	220	659.1	3689.2	3.50	0.0	0.115	10.0	0.0	0.0	0.
29	230	680.2	3710.4	23.50	0.0	0.397	10.0	0.0	0.0	0.
30	240	677.0	3710.[illegible]	52.20	0.0	1.896	10.0	0.0	0.0	0.
31	250	663.1	3699.7	32.90	0.0	2.019	10.0	0.0	0.0	0.
32	261	670.2	3695.5	51.40	0.0	0.788	10.0	0.0	0.0	0.
33	262	655.2	3699.1	58.10	0.0	0.205	10.0	0.0	0.0	0.
34	271	649.8	3687.2	118.20	0.0	2.041	10.0	0.0	0.0	0.
35	272	655.3	3659.2	34.30	0.0	1.227	10.0	0.0	0.0	0.
36	280	625.2	3692.0	113.90	0.0	1.413	10.0	0.0	0.0	0.
37	281	655.5	3680.0	224.10	0.0	0.569	10.0	0.0	0.0	0.
38	282	657.3	3684.4	11.20	0.0	0.518	10.0	0.0	0.0	0.
39	283	639.3	3683.0	135.10	0.0	0.522	10.0	0.0	0.0	0.
40	1140 1 1 2	630.0	3710.1	0.0	0.0	0.033	42.0	1.0	33.0	200.
41	1140 2 1	658.5	3692.6	0.0	2.055	0.144	250.0	11.1	50.0	190.
42	1140 2 2	658.5	3692.5	0.0	2.055	0.231	250.0	11.3	50.0	192.
43	1140 2 3	658.5	3692.6	0.0	0.0	0.274	250.0	4.5	21.0	155.
44	1140 2 4	659.5	3692.[illegible]	0.0	0.0	0.456	260.0	4.5	21.0	165.
45	1140 2 5	658.5	3692.[illegible]	0.0	0.0	0.236	100.0	5.0	25.0	162.
46	1140 2 6 7	658.5	3692.6	0.0	0.0	0.580	100.0	6.1	42.2	180.
47	1140 2 1	653.5	[illegible]	0.0	3.830	0.293	70.0	[illegible]	40.0	300.
48	1140 2 014	[illegible]8.5	[illegible]	0.0	12.432	5.152	250.0	15.0	40.0	502.
49	1140 22516	658.5	3692.6	0.0	7.577	0.548	90.0	5.0	30.0	600.
50	1140 3 1	659.1	[illegible]	0.0	0.0	0.025	50.0	2.1	11.2	90.
51	1140 3 2	659.1	[illegible]	0.0	0.0	0.055	25.0	2.0	16.0	90.
52	1140 3 3	659.1	3693.3	0.0	0.0	0.044	33.0	2.5	35.0	50.
53	1140 3 4	659.1	[illegible]	0.0	0.013	0.052	[illegible]	[illegible]	44.0	900.

```
|  54   1140  4 1 3  |  658.9  |  3693.1  |  0.0  |  0.0       0.021  |  30.0   3.4   2.0   212. |
|  55   1140  4 4    |  658.9  |  3693.4  |  0.0  |  0.0       0.364  | 120.0  31.3   3.0    70. |
|  56   1140  4 6    |  658.9  |  3693.4  |  0.0  |  0.157     0.019  |  80.0   4.0  50.0   500. |
|  57   1140  4 7    |  658.9  |  3693.4  |  0.0  |  0.192     0.022  |  30.0   3.0   3.0   600. |
|  58   1140  4 8    |  658.9  |  3693.5  |  0.0  |  0.0       0.110  |  40.0   0.0   0.0    80. |
|  59   1140  5 1    |  553.5  |  3583.4  |  0.0  | 26.932     1.515  | 400.0  20.0  42.2   100. |
|  60   1140  8 1    |  644.1  |  3628.1  |  0.0  |  0.014     0.047  |  40.0   3.2  50.0   300. |
|  61   1140  8 2    |  559.9  |  3533.0  |  0.0  |  0.0       0.194  |  49.0   4.0   5.3   200. |
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GEORGETOWN COUNTY, SOUTH CAROLINA PROJECTIONS 1985 POINT/AREA SOURCES

RECEPTOR DATA

LOCATIONS TO BE USED AS RECEPTORS IN ADDITION TO THE 100 RECTANGULAR GRID LOCATIONS

RECEPTOR NUMBER	X-COORDINATE (KILOMETERS)	Y-COORDINATE (KILOMETERS)
101	653.1	3694.0
102	658.4	3693.2
103	659.6	3692.8
104	659.4	3693.3
105	653.0	3692.4
106	665.0	3715.0
107	630.0	3715.0
108	675.5	3705.0
109	674.0	3700.0

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                GEORGETOWN COUNTY, SOUTH CAROLINA  PROJECTIONS 1995  POINT/AREA SOURCES

            METEOROLOGICAL INPUT DATA FOR  ANNUAL


MIXING DEPTH = 1300. METERS
AMBIENT TEMPERATURE =    65. DEGREES,FAHRENHEIT
AMBIENT PRESSURE = 1013. MILLIBARS

STABILITY CLASS  1
                                             WINDSPEED CLASS

  WIND DIRECTION         1         2         3         4         5         6

       N              .00046    .00041    .0        .0        .0        .0

       NNE            .00012    .00025    .0        .0        .0        .0

       NE             .00003    .00005    .0        .0        .0        .0

       ENE            .00010    .00014    .0        .0        .0        .0

       E              .00039    .00078    .0        .0        .0        .0

       ESE            .00031    .00064    .0        .0        .0        .0

       SE             .00026    .00043    .0        .0        .0        .0

       SSE            .00029    .00101    .0        .0        .0        .0

       S              .00036    .00059    .0        .0        .0        .0

       SSW            .00014    .00019    .0        .0        .0        .0

       SW             .00030    .00023    .0        .0        .0        .0

       WSW            .00053    .00034    .0        .0        .0        .0

       W              .00090    .00055    .0        .0        .0        .0

       WNW            .00031    .00030    .0        .0        .0        .0

       NW             .00022    .00027    .0        .0        .0        .0

       NNW            .00034    .00030    .0        .0        .0        .0
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GEORGETOWN COUNTY, SOUTH CAROLINA PROJECTIONS 1985 [illegible]

METEOROLOGICAL INPUT DATA FOR ANNUAL

STABILITY CLASS 2

	WINDSPEED CLASS					
WIND DIRECTION	1	2	3	4	5	6
N	.00507	.00254	.00101	.0	.0	.0
NNE	.00239	.00178	.00103	.0	.0	.0
NE	.00292	.00156	.00062	.0	.0	.0
ENE	.00141	.00114	.00175	.0	.0	.0
E	.00271	.00382	.00233	.0	.0	.0
ESE	.00238	.00435	.00261	.0	.0	.0
SE	.00191	.00386	.00224	.0	.0	.0
SSE	.00222	.00449	.00325	.0	.0	.0
S	.00246	.00457	.00524	.0	.0	.0
SSW	.00140	.00123	.00062	.0	.0	.0
SW	.00130	.00105	.00046	.0	.0	.0
WSW	.00217	.00178	.00119	.0	.0	.0
W	.00393	.00390	.00181	.0	.0	.0
WNW	.00195	.00213	.00099	.0	.0	.0
NW	.00110	.00133	.00062	.0	.0	.0
NNW	.00271	.00112	.00062	.0	.0	.0

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[illegible] COUNTY, SOUTH CAROLINA [illegible] PROJECTIONS 1985 [illegible]

METEOROLOGICAL INPUT DATA FOR [illegible]

STABILITY CLASS [illegible]

	WINDSPEED CLASS					
WIND DIRECTION	1	2	3	4	5	6
N	.00237	.00407	[illegible]	.00034	.0	.0
NNE	.00132	.00273	.00392	.00035	.0	.0
NE	.00100	.00253	.00358	.00005	.0	.0
ENE	.00077	.00213	.00272	.00013	.0	.0
E	.00119	.00252	.00359	.00020	.0	.0
ESE	.00113	.00361	.00549	.00025	.0	.0
SE	.00103	.00306	.00344	.00023	.0	.0
SSE	.00103	.00403	.00533	.00039	.0	.0
S	.00168	.00492	.01578	.00329	.00007	.0
SSW	.00080	.00201	.00591	.00071	.00002	.0
SW	.00092	.00158	.00174	.00007	.0	.0
WSW	.00067	.00215	.00252	.00013	.0	.0
W	.00123	.00412	.00479	.00034	.0	.0
WNW	.00055	.00236	.00221	.00019	.00002	.0
NW	.00075	.00159	.00226	.00015	.0	.0
NNW	.00113	.00162	.00264	.00033	.0	.0

GEORGETOWN COUNTY, SOUTH CAROLINA PROJECTIONS 1985 POINT/AREA SOURCES

METEOROLOGICAL INPUT DATA FOR ANNUAL

STABILITY CLASS 4

	WINDSPEED CLASS					
WIND DIRECTION	1	2	3	4	5	6
N	.00165	.00521	.00743	.00572	.00053	.0
NNE	.00107	.00419	.00547	.00247	.00015	.0
NE	.00095	.00373	.00359	.00133	.00007	.0
ENE	.00094	.00290	.00351	.00095	.00005	.00002
E	.00109	.00464	.00583	.00210	.0	.0
ESE	.00067	.00299	.00226	.00062	.00002	.0
SE	.00046	.00133	.00158	.00053	.00002	.0
SSE	.00063	.00322	.00210	.00069	.00002	.0
S	.00055	.00483	.00901	.00702	.00025	.0
SSW	.00039	.00251	.00509	.00437	.00021	.00002
SW	.00037	.00213	.00153	.00092	.0	.0
WSW	.00053	.00204	.00176	.00107	.0	.0
W	.00079	.00274	.00293	.00200	.00023	.0
WNW	.00040	.00155	.00222	.00275	.00020	.00002
NW	.00044	.00105	.00222	.00137	.00039	.0
NNW	.00047	.00191	.00233	.00293	.00046	.00007

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[illegible] COUNTY, SOUTH CAROLINA [illegible]

[illegible] METEOROLOGICAL INPUT DATA FOR [illegible]

STABILITY CLASS  6
                                   WIND SPEED CLASS
WIND DIRECTION
                      1        2        3        4        5        6
      N            .03928   .02103   .00310   .00259   .00016   .00007
      NNE          .02524   .01607   .00883   .00117   .00002   .0
      NE           .01407   .01155   .00586   .00103   .0       .0
      ENE          .00964   .00512   .00389   .00152   .00005   .0
      E            .01483   .01052   .00752   .00017   .00002   .0
      ESE          .00744   .00556   .00724   .00019   .0       .0
      SE           .00601   .00347   .00210   .00027   .0       .0
      SSE          .01039   .00517   .00175   .00037   .00002   .0
      S            .02136   .01257   .00731   .00144   .00007   .0
      SSW          .02715   .01692   .00949   .00162   .00014   .0
      SW           .02927   .01255   .00516   .00025   .00002   .0
      WSW          .02060   .00501   .00242   .00054   .00002   .0
      W            .02654   .01251   .00579   .00130   .00015   .0
      WNW          .01197   .00617   .00377   .00047   .00011   .00002
      NW           .00824   .00451   .00376   .00129   .00014   .0
      NNW          .02321   .00763   .00375   .00185   .00015   .00002
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                    GEORGETOWN COUNTY, SOUTH CAROLINA  PROJECTIONS 1985  POINT/AREA SOURCES

INPUT REGRESSION PARAMETERS ARE:

   POLLUTANT            Y-INTERCEPT          SLOPE

   PARTICULATES             0.0              1.0000
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GEORGETOWN COUNTY, SOUTH CAROLINA PROJECTIONS 1985 POINT/AREA SOURCES

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	RECEPTOR LOCATION (KILOMETERS) VERT	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) PARTICULATE
1	653.0	3689.0	0.	41.
2	653.0	3690.0	0.	49.
3	653.0	3691.0	0.	43.
4	653.0	3692.0	0.	47.
5	653.0	3693.0	0.	48.
6	653.0	3694.0	0.	52.
7	653.0	3695.0	0.	52.
8	653.0	3696.0	0.	51.
9	653.0	3697.0	0.	51.
10	653.0	3698.0	0.	50.
11	654.0	3689.0	0.	47.
12	654.0	3690.0	0.	49.
13	654.0	3691.0	0.	49.
14	654.0	3692.0	0.	48.
15	654.0	3693.0	0.	50.
16	654.0	3694.0	0.	53.
17	654.0	3695.0	0.	53.
18	654.0	3696.0	0.	52.
19	654.0	3697.0	0.	52.
20	654.0	3698.0	0.	51.
21	655.0	3689.0	0.	47.
22	655.0	3690.0	0.	50.
23	655.0	3691.0	0.	49.
24	655.0	3692.0	0.	50.
25	655.0	3693.0	0.	50.
26	655.0	3694.0	0.	53.
27	655.0	3695.0	0.	52.
28	655.0	3696.0	0.	53.
29	655.0	3697.0	0.	53.
30	655.0	3698.0	0.	52.
31	656.0	3689.0	0.	51.
32	656.0	3690.0	0.	50.
33	656.0	3691.0	0.	51.
34	656.0	3692.0	0.	50.
35	656.0	3693.0	0.	49.
36	656.0	3694.0	0.	50.
37	656.0	3695.0	0.	52.
38	656.0	3696.0	0.	52.
39	656.0	3697.0	0.	51.
40	656.0	3698.0	0.	49.

GEORGETOWN COUNTY, SOUTH CAROLINA PROJECTIONS 1985 POINT/AREA SOURCES

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	VERT	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	PARTICULATES
41	657.0	3589.0	0.	51.
42	657.0	3590.0	0.	52.
43	657.0	3591.0	0.	52.
44	657.0	3592.0	0.	51.
45	657.0	3593.0	0.	52.
46	657.0	3594.0	0.	50.
47	657.0	3595.0	0.	49.
48	657.0	3596.0	0.	49.
49	657.0	3597.0	0.	47.
50	657.0	3598.0	0.	47.
51	658.0	3589.0	0.	54.
52	658.0	3590.0	0.	55.
53	658.0	3591.0	0.	54.
54	658.0	3592.0	0.	55.
55	658.0	3593.0	0.	58.
56	658.0	3594.0	0.	55.
57	658.0	3595.0	0.	54.
58	658.0	3596.0	0.	53.
59	658.0	3597.0	0.	52.
60	658.0	3598.0	0.	51.
61	659.0	3589.0	0.	53.
62	659.0	3590.0	0.	54.
63	659.0	3591.0	0.	58.
64	659.0	3592.0	0.	55.
65	659.0	3593.0	0.	90.
66	659.0	3594.0	0.	85.
67	659.0	3595.0	0.	63.
68	659.0	3596.0	0.	56.
69	659.0	3597.0	0.	54.
70	659.0	3598.0	0.	52.
71	660.0	3589.0	0.	47.
72	660.0	3590.0	0.	50.
73	660.0	3591.0	0.	52.
74	660.0	3592.0	0.	54.
75	660.0	3593.0	0.	58.
76	660.0	3594.0	0.	60.
77	660.0	3595.0	0.	59.
78	660.0	3596.0	0.	56.
79	660.0	3597.0	0.	53.
80	660.0	3598.0	0.	52.

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GEORGETOWN COUNTY, SOUTH CAROLINA RECEPTORS 1985 [illegible]

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	VERT	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	PARTICULATES
81	661.0	3649.0	0.	37.
82	661.0	3650.0	0.	47.
83	661.0	3651.0	0.	43.
84	661.0	3652.0	0.	49.
85	661.0	3653.0	0.	53.
86	661.0	3654.0	0.	53.
87	661.0	3655.0	0.	54.
88	661.0	3656.0	0.	53.
89	661.0	3657.0	0.	52.
90	661.0	3658.0	0.	51.
91	662.0	3649.0	0.	45.
92	662.0	3650.0	0.	45.
93	662.0	3651.0	0.	55.
94	662.0	3652.0	0.	47.
95	662.0	3653.0	0.	41.
96	662.0	3654.0	0.	49.
97	662.0	3655.0	0.	50.
98	662.0	3656.0	0.	51.
99	662.0	3657.0	0.	50.
100	662.0	3658.0	0.	41.
101	659.1	3654.0	0.	94.
102	659.4	3653.2	0.	53.
103	658.7	3652.9	0.	67.
104	659.3	3653.3	0.	91.
105	659.0	3652.4	0.	72.
106	685.0	3715.0	0.	33.
107	680.0	3715.0	0.	35.
108	676.5	3705.0	0.	33.
109	674.0	3709.0	0.	32.

GEORGETOWN COUNTY, SOUTH CAROLINA PROJECTIONS 1985 POINT/AREA SOURCES

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 65	RECEPTOR 55	RECEPTOR 101	RECEPTOR 104	RECEPTOR 105
1	0.55 %	0.58 %	0.59 %	0.61 %	0.67 %
	0.4903	0.4911	0.4737	0.4250	0.4973
2	0.75 %	0.79 %	0.91 %	0.86 %	0.91 %
	0.6709	0.6750	0.5729	0.5219	0.5595
3	0.40 %	0.43 %	0.44 %	0.45 %	0.49 %
	0.3575	0.3670	0.3530	0.3543	0.3520
4	0.89 %	0.94 %	0.94 %	0.96 %	1.08 %
	0.7977	0.7913	0.7889	0.7757	0.7944
5	0.29 %	0.30 %	0.30 %	0.31 %	0.34 %
	0.2487	0.2546	0.2555	0.2540	0.2447
6	0.92 %	0.93 %	1.00 %	1.01 %	1.13 %
	0.8292	0.8467	0.8412	0.8200	0.8201
7	1.32 %	1.42 %	1.44 %	1.45 %	1.62 %
	1.1866	1.2102	1.2060	1.1521	1.1720
8	0.02 %	0.03 %	0.03 %	0.03 %	0.03 %
	0.0205	0.0223	0.0223	0.0209	0.0123
9	0.01 %	0.01 %	0.01 %	0.01 %	0.01 %
	0.0112	0.0122	0.0122	0.0115	0.0107
10	0.33 %	0.36 %	0.37 %	0.37 %	0.40 %
	0.2944	0.3067	0.3062	0.2954	0.2953
11	0.23 %	0.26 %	0.27 %	0.26 %	0.27 %
	0.2068	0.2246	0.2239	0.2131	0.1937
12	0.53 %	0.59 %	0.59 %	0.59 %	0.63 %
	0.4725	0.4977	0.4970	0.4775	0.4269
13	0.35 %	0.40 %	0.40 %	0.39 %	0.42 %
	0.3160	0.3374	0.3361	0.3179	0.2955
14	0.85 %	0.91 %	0.92 %	0.93 %	1.04 %
	0.7626	0.7737	0.7699	0.7507	0.7554
15	4.86 %	5.24 %	5.36 %	5.57 %	5.92 %
	4.3577	4.4625	4.4927	4.5029	4.2216
16	0.98 %	1.03 %	1.04 %	1.05 %	1.21 %
	0.8812	0.8795	0.8720	0.8510	0.8773
17	5.02 %	4.94 %	5.00 %	4.94 %	5.11 %
	4.4992	4.2105	4.1911	3.9963	4.2279
18	2.83 %	3.23 %	3.20 %	3.16 %	3.70 %
	2.5400	2.7534	2.7645	2.5516	2.6844
19	0.94 %	1.70 %	2.13 %	1.75 %	0.94 %
	0.8390	1.4500	1.8397	1.4121	0.6793
20	1.71 %	7.35 %	6.67 %	1.76 %	1.05 %
	1.5334	6.2661	5.5086	1.4209	0.7552
21	0.33 %	0.57 %	0.45 %	0.31 %	0.47 %
	0.2971	0.5012	0.3793	0.2457	0.3352

GEORGETOWN COUNTY, SOUTH CAROLINA PROJECTIONS 1985 POINT/AREA SOURCES

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 65	RECEPTOR 66	RECEPTOR 101	RECEPTOR 104	RECEPTOR 105
22	0.04 %	0.06 %	0.06 %	0.05 %	0.05 %
	0.0396	0.0436	0.0486	0.0370	0.0332
23	0.77 %	1.13 %	1.10 %	0.90 %	1.14 %
	0.6867	0.9644	0.9226	0.7265	0.8271
24	6.02 %	1.96 %	1.99 %	9.91 %	3.39 %
	5.3972	1.6721	1.5934	7.9321	2.4319
25	0.20 %	0.10 %	0.11 %	0.31 %	0.29 %
	0.1907	0.0970	0.0950	0.2503	0.2072
26	0.04 %	0.03 %	0.04 %	0.09 %	0.04 %
	0.0372	0.0295	0.0319	0.0691	0.0323
27	0.26 %	0.22 %	0.23 %	0.33 %	0.75 %
	0.2347	0.1877	0.1954	0.2673	0.5432
28	0.37 %	0.34 %	0.35 %	0.40 %	0.50 %
	0.3290	0.2932	0.2917	0.3247	0.3601
29	0.12 %	0.11 %	0.12 %	0.13 %	0.15 %
	0.1037	0.0967	0.0979	0.1063	0.1074
30	0.74 %	0.76 %	0.78 %	0.84 %	0.93 %
	0.6660	0.6507	0.6557	0.6810	0.6741
31	1.25 %	1.30 %	1.33 %	1.42 %	1.56 %
	1.1236	1.1061	1.1144	1.1500	1.1312
32	0.38 %	0.41 %	0.41 %	0.44 %	0.49 %
	0.3450	0.3454	0.3468	0.3523	0.3545
33	0.10 %	0.10 %	0.11 %	0.11 %	0.12 %
	0.0892	0.0881	0.0886	0.0900	0.0878
34	1.42 %	1.49 %	1.51 %	1.56 %	1.67 %
	1.2759	1.2738	1.2695	1.2521	1.2099
35	1.72 %	1.79 %	1.81 %	1.89 %	2.10 %
	1.5387	1.5226	1.5202	1.5223	1.5220
36	0.64 %	0.68 %	0.69 %	0.71 %	0.79 %
	0.5737	0.5791	0.5795	0.5708	0.5702
37	0.26 %	0.28 %	0.28 %	0.29 %	0.33 %
	0.2348	0.2389	0.2325	0.2363	0.2361
38	0.82 %	0.77 %	0.79 %	0.90 %	1.05 %
	0.7372	0.6557	0.6590	0.7239	0.7584
39	0.30 %	0.31 %	0.32 %	0.33 %	0.38 %
	0.2707	0.2612	0.2667	0.2675	0.2727
40	0.01 %	0.01 %	0.01 %	0.01 %	0.01 %
	0.0096	0.0104	0.0104	0.0098	0.0092
41	0.00 %	0.02 %	0.02 %	0.01 %	0.00 %
	0.0017	0.0177	0.0149	0.0061	0.0003
42	0.00 %	0.04 %	0.04 %	0.02 %	0.00 %
	0.0034	0.0355	0.0301	0.0123	0.0019

GEORGETOWN COUNTY, SOUTH CAROLINA PROJECTIONS 1985 POINT/AREA SOURCES

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 65	RECEPTOR 66	RECEPTOR 101	RECEPTOR 103	RECEPTOR 105
43	0.07 %	0.19 %	0.17 %	0.12 %	0.09 %
	0.0660	0.1595	0.1428	0.0935	0.0652
44	0.09 %	0.24 %	0.22 %	0.15 %	0.12 %
	0.0779	0.2074	0.1352	0.1214	0.0936
45	0.18 %	0.43 %	0.42 %	0.27 %	0.29 %
	0.1570	0.3695	0.3491	0.2177	0.2062
46	0.11 %	0.46 %	0.42 %	0.20 %	0.17 %
	0.1024	0.3906	0.3539	0.1640	0.1212
47	0.01 %	0.07 %	0.06 %	0.02 %	0.01 %
	0.0054	0.0555	0.0490	0.0131	0.0096
48	0.00 %	0.01 %	0.01 %	0.01 %	0.00 %
	0.0001	0.0102	0.0094	0.0020	0.0000
49	0.00 %	0.04 %	0.03 %	0.01 %	0.00 %
	0.0022	0.0337	0.0285	0.0092	0.0011
50	2.64 %	2.24 %	2.80 %	2.99 %	4.36 %
	2.3717	1.9100	2.3430	2.4165	3.1579
51	7.89 %	2.61 %	3.27 %	8.11 %	4.62 %
	7.0753	2.2270	2.7392	6.5592	3.3503
52	5.90 %	2.75 %	3.45 %	6.08 %	5.00 %
	5.2920	2.3519	2.9029	4.9153	3.6257
53	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %
	0.0000	0.0002	0.0002	0.0000	0.0002
54	0.41 %	0.57 %	0.53 %	0.42 %	0.89 %
	0.3687	0.4955	0.4421	0.3357	0.6402
55	0.02 %	0.16 %	0.10 %	0.05 %	0.21 %
	0.0130	0.1393	0.0799	0.0377	0.1535
56	0.00 %	0.01 %	0.01 %	0.00 %	0.01 %
	0.0008	0.0093	0.0049	0.0022	0.0039
57	6.36 %	2.90 %	2.76 %	3.07 %	2.59 %
	5.7063	2.4679	2.3109	2.4793	1.9255
58	14.20 %	17.50 %	15.55 %	4.93 %	5.50 %
	12.7386	14.9159	13.0451	3.9071	3.7131
59	0.01 %	0.01 %	0.01 %	0.01 %	0.01 %
	0.0087	0.0072	0.0073	0.0055	0.0096
60	0.00 %	0.01 %	0.01 %	0.01 %	0.01 %
	0.0043	0.0051	0.0051	0.0045	0.0032
61	0.29 %	2.35 %	2.31 %	1.65 %	3.49 %
	0.2593	2.0025	1.9374	1.3334	2.5222
BACK-GROUND	22.31 %	23.47 %	23.95 %	24.74 %	27.58 %
	20.	20.	20.	20.	20.
TOTAL	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %
	89.7168	85.2417	83.5526	80.8543	72.5137